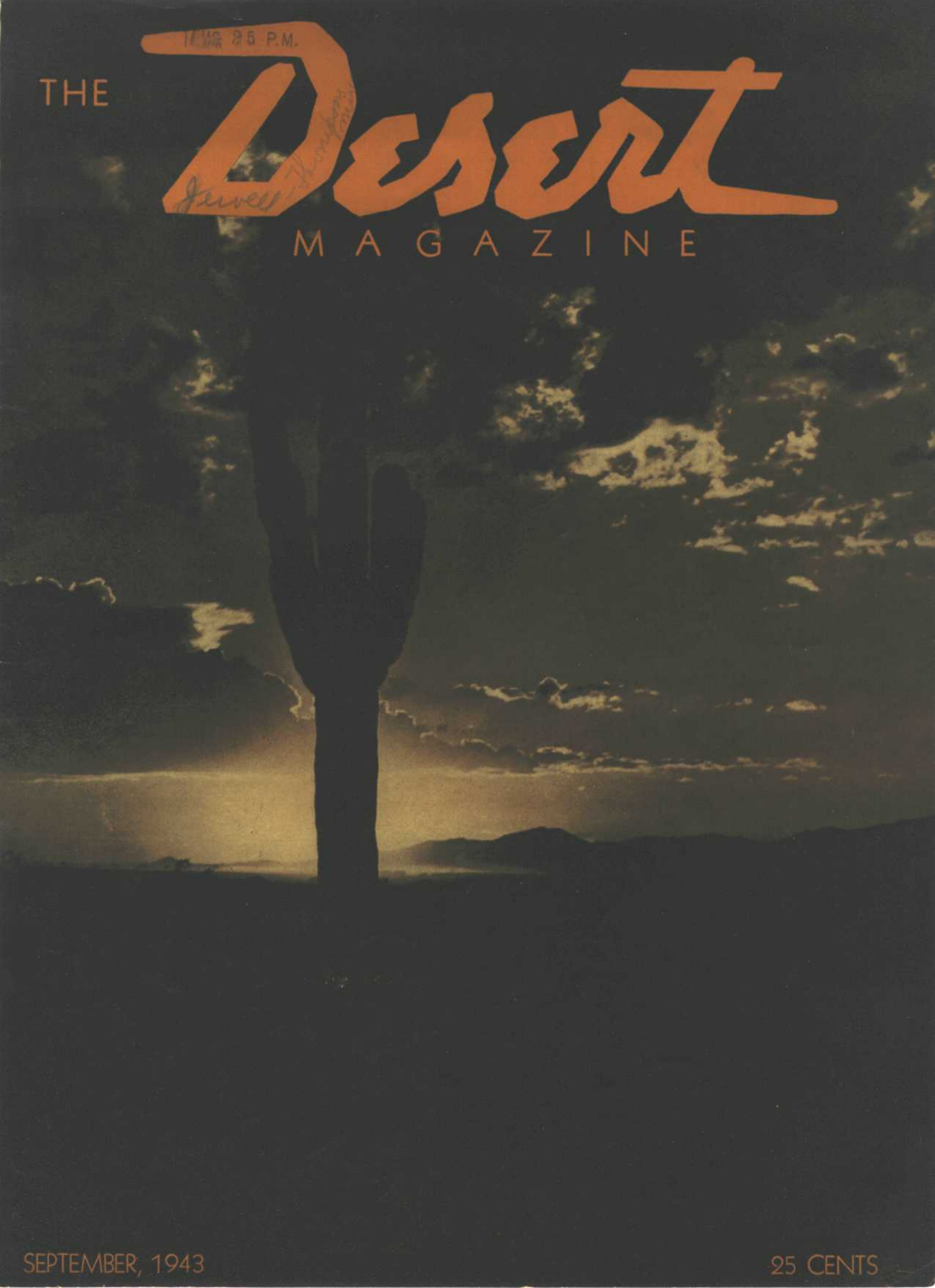


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THE

Desert

MAGAZINE



SEPTEMBER, 1943

25 CENTS

LETTERS . . .

"Courage" Out of Place in D. M.? . . .

Banning, California

Editor Desert Magazine:

For the first time since picking up and reading your March, 1939, issue, I have a sense of disappointment. It seems to me that the story, "Courage is Born of the Desert" in the July issue, is out of place in your magazine. It spoils an otherwise good printing.

JIM PIERCE

Coyote Clubs for Morale . . .

Phoenix, Arizona

Dear Editor:

I want to express my appreciation of your splendid magazine and to all who contribute in every way to make it the best publication of its kind in the West.

I gain new inspiration and desert education from every issue, and after reading Mr. Phil Stephens' story of "Courage" in the July number, think it would be a good thing to organize a group of "Wild Coyote" clubs throughout the desert area of the West. It would not only help maintain morale during the war but would add local color and preserve the Easterner's conception of true Western spirit and hospitality. Would appreciate some ideas along that line from interested readers.

B. R. BERTRAM

Bombers Blast Rockhound Field . . .

Hinkley, California

Dear D.M.:

Can't help writing a few lines of appreciation for your splendid periodical and for the friends I have made through its columns. Enclosed clipping about the new bombing range to be created north and west of Barstow spells finis to rock hunting in my favorite fields. Just as I am becoming a hopeless, rabid rockhound, they close the roads to my favorite hunting grounds!

After carefully saving drop by drop a few extra squirts of gas, I took a jaunt across Harper dry lake last Sunday to find that Perfect Geode I had been seeking so long, only to be faced with a rude sign which said in no uncertain terms KEEP OUT. BOMBING RANGE. Now what to do? No more can I decide suddenly to toss a canteen and pick into the car and wend my way to hunt Indian arrows or wampum or try to figure out the meaning of the Indian signs chiseled on the walls of Black canyon or dig for opals I don't find or climb high to look into a hawk's nest or even get stuck in the sand and struggle out via the sagebrush-chucked-under-the-wheels method. Or best of all, just sit and watch the sunset from a high ledge or listen to the evening breeze as I build a campfire where I can think through problems that heckle me. Guess I'll just have to join the WACS and help get this thing finished. In the meantime I can dream, with D.M. to help out.

MRS. MARIAN MILLIGAN

Finds Clue in Photograph . . .

Inglewood, California

Dear Sirs:

Your article in July D.M. about Lurt and Maggie Knee shows some pillows on the chair, one with "73s" which means "best regards" to telegraphers on the railroads.

ALFRED N. BESTOR



Chief Tecopah of Death Valley.

Knew Death Valley Chief . . .

Santa Cruz, California

Dear Friends:

I always read Desert Magazine with interest, and often find articles of special interest to me, such as "Long Man" in the May issue telling about Panamint Tom whom I knew about when I lived a short distance from Ash Meadows at the Johnnie Mine and the town of Johnnie. (We made a trip there in 1941 and found my adobe home just a pile of adobe dirt and only the walls of Johnnie store standing.)

After seeing the picture of Panamint Tom, I thought you would be interested in another famous character of Death Valley—Chief Tecopah, of the renegade Piutes of that section. The picture I'm enclosing shows him in uniform and stove pipe hat in which the miners dressed him especially for this photograph. My husband and I were there about 1905, when the Indians were feasting at his funeral. They buried flour, meat and other foods with him. Indians had come from all the country around, staying three days celebrating and gambling.

At the time, we were 110 miles from the railroad, at Ivanpah. I was the only white woman within 50 miles, and our little five year old son the only white child. It was a thrill to watch the Indians who would come in to see this white child with red hair.

MRS. CORA LEE FAIRCHILD

DESERT Close-Ups

• Charles Kelly, who will start out looking for petroglyphs at the drop of a hat, describes in this issue the superb etchings of Nine Mile canyon in Utah. Kelly doesn't always find Indian engravings however on an "autograph hunt." A few years ago, while searching in Wayne county, Utah, he chanced upon a link in the 150-year old legend of the Lost Josephine mine. Location of the mine is placed variously in La Plata mountains of Colorado, La Sals of southeastern Utah and in Henry mountains on west bank of Colorado river. Kelly gives an account of the colorful legend in a story to appear soon.

• Jerry Lauder milk has been explaining desert puzzles—such as desert varnish, rillensteine, geodes and thunder eggs, color—and in this issue, mirages. Next he will tell Desert readers how he and a colleague in the laboratories of California Institute of Technology "broke the case" of Lightning Spalling, proving by experimentation that lightning is the agent which splits certain rocks which are seen in desert areas.

• Three more in the series of prize stories will appear in succeeding issues of Desert. Adventurous pioneer experience of Ethel Caughlin in New Mexico is told by Helen Pratt of Victorville, California. Lynda R. Woods, of San Jose, California, won a prize with her account of a thrilling and tragic experience in a sudden desert flood in northern Arizona. Third of the trio gives an insight into the desert lore of Indian and prospector. It is an account of a trip in the Death Valley region which the author, Wm. Caruthers took with Shorty Harris—who initiates a tenderfoot in the ways of a desert rat.

• Among travelogs scheduled for future Desert issues, is one which ventures into the desert country of western Colorado. W. C. Minor, of Fruita, Colorado, will serve as guide to Goblin Gulch—a remote canyon of nightmarish natural carvings and ghostly figures.

• Josef and Joyce Muench, that photographer-writer team of Santa Barbara, have collaborated on a story of New Mexico's El Morro, greatest stone autograph of them all.

• John L. Blackford, whose pictorials "Desert Magic" and "Desert Trees" have received many appreciative notes from Desert readers, has prepared another pictorial on Navajo family life in an isolated section of Monument Valley.



Volume 6

SEPTEMBER, 1943

Number 11

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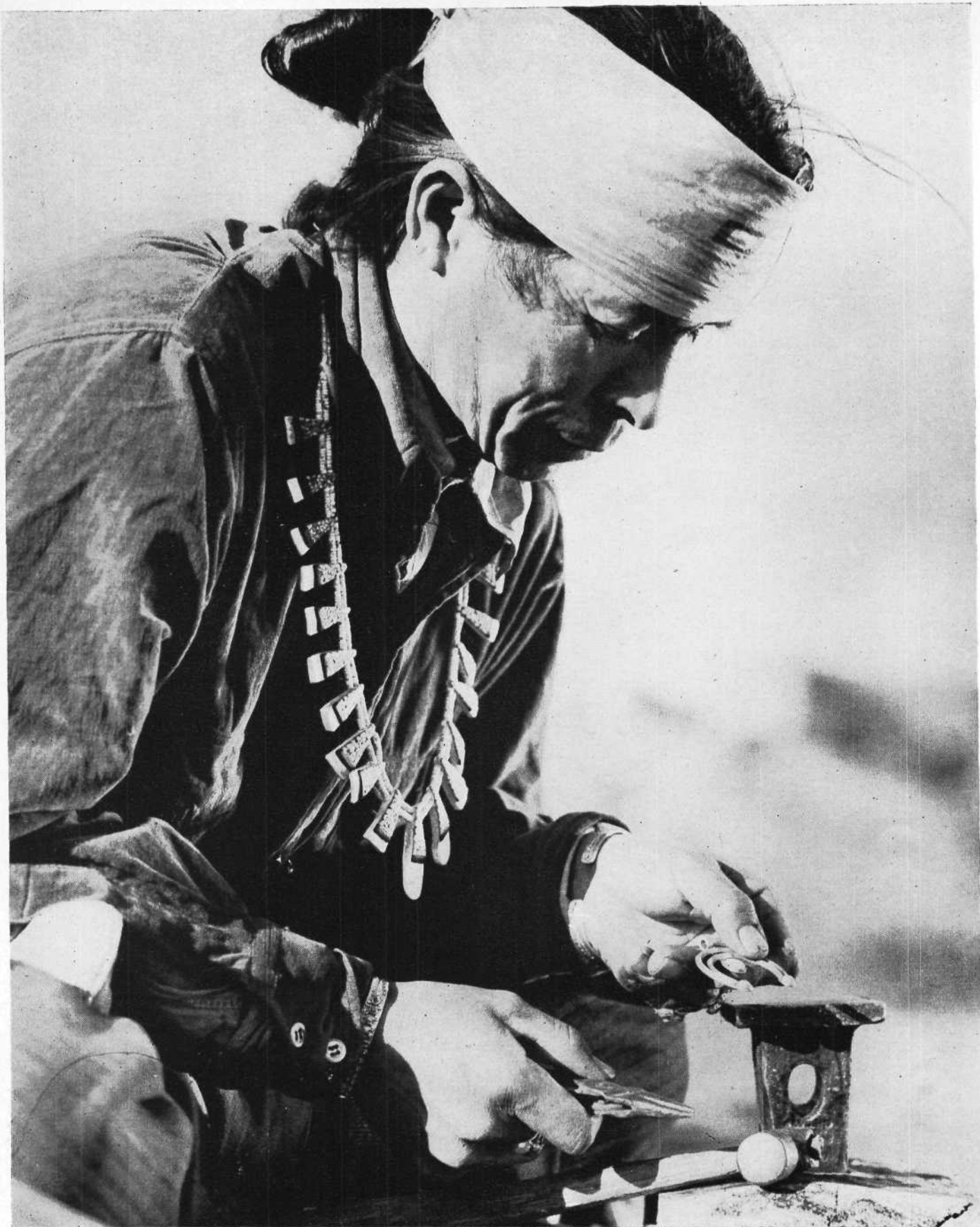
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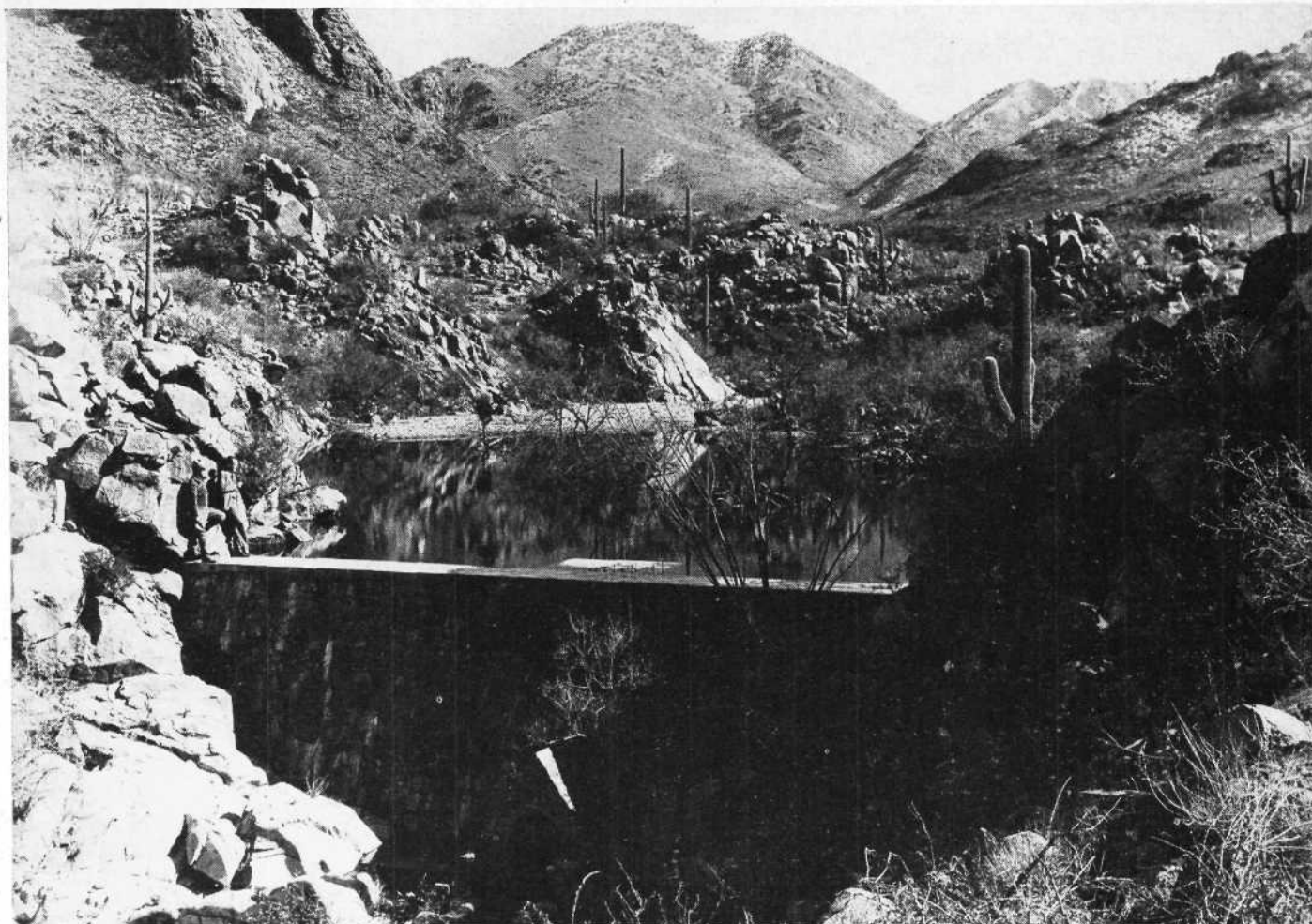
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Joe Lee, Navajo Silversmith

Photo by Milton Snow
Window Rock, Arizona

Most typical product of the Navajo is an alien art. Silver working was learned from Mexican silversmiths after 1850. First recognized native smith was Atsidi Sani (the Old Smith) who learned his craft from the Mexican silversmith taken to Fort Defiance, Arizona, by Captain Henry L. Dodge, Indian agent, in 1853.



Papago Indians have shown a remarkable skill at dry farming. They take advantage of every drop of scant rainfall by building strategically placed charcos, or dams, such as the above.

Bean People of the Cactus Forest

"I've seen what your civilization amounts to and I'm going back to my 'heathen' people. I'm going home where I belong!" And Masilla came back to the arid sun-hot land of the Papagos in southern Arizona. She had seen white civilization—first at school, then in nurses' training at a great eastern hospital, finally as a volunteer nurse overseas during World War I. In the cactus studded land of her people her life is filled with a variety and self-sufficiency known to few modern whites . . . And only her own people know how many lives among them she has saved with her skill and care.

By MARGARET STONE
U. S. Indian service photos.

INSIDE the shady patio of the Papago home a drowsy mocking bird sang softly in its woven wicker cage. It was June in the land of the Papago Indians, June on their reservation lying in the most southern and arid portion of Arizona.

Two hundred and fifty years ago Father Kino found this tribe of gentle peaceful Indians living here. He gave them Spanish wheat and onions and watermelons to add

to their corn and beans and pumpkins and showed them how to plant and cultivate the grapes, pomegranates and currants he had brought from sunny Spain. The climate was too hot for sheep but they were pleased with the cattle and horses he bestowed upon them. All these gifts they adapted to their desert life.

At that time their country belonged to Mexico. It has been only 90 years since the Gadsden Purchase added it to the

United States. Next in size to that of the Navajo, the reservation reaches up to dry rocky elevations of 4,000 feet and swoops down over cactus studded hills to the low-lying desert with its 115 degree heat at the Mexican border.

In this desert reservation 6,000 Papago (Papah-oo-tam, Bean People) live untroubled by ration problems shadowing their white brothers. They raise their own cattle, tan the hides for leather. Their small fields provide wheat and corn for bread, and there are a hundred different desert plants and shrubs that give food and drink to these self-sufficient Indians.

Only government engineers who surveyed water conditions on their land can appreciate the ingenious method by which the Papagos develop and maintain enough moisture to wrest a living for their herds and cultivated fields from that ungracious soil. They have a skill at dry farming which is the despair of white dry farmers. Utilizing every scanty natural water resource by strategically placed dams, *char-*

cos, and taking advantage of every drop of rainfall, they have conquered the desert.

It was time to harvest the fruit of the saguaro, giant cactus, in the Papago reservation when I came to spend a few days with my friend Masilla. But there were a few household tasks to be completed before we could go gypsying into the cactus forest. There was the matter of selling her completed baskets promised for delivery that very day.

Masilla settled herself on a woven mat of her own making in a cool corner of the ramada and pulled a big wood basket to-

ward her. It was finished with the exception of the cross stick weave of black around the rim. While she selected a strip of martynia or devil's claw for the purpose I took stock of my surroundings. We had stayed in the house proper only long enough to dispose of my belongings before returning to the cool breezy ramada. The house itself was one big square room made of ocotillo stalks set upright in the hard earth and supported with ribs of saguaro. It was plastered with mud which filled in all the chinks, and roofed with reeds and tules over which 'dobe and gravel were spread. The floor was 'dobe and packed

to rocky hardness. Here and there big cool looking mats woven from yucca leaf fiber were scattered over the floor. The only furniture was a huge bright painted Spanish chest out of which came the family finery on festive occasions, and an iron bed, evidently saved for special guests.

The ramada under which we sat was the place where the family lived. A good sized cottage could have been sheltered under the spreading roof. Tiers of posts sunk in the ground held a framework of rafters over which a roof of interlaced reeds and willows was woven. Three beds were out there, woven mats beside each one.

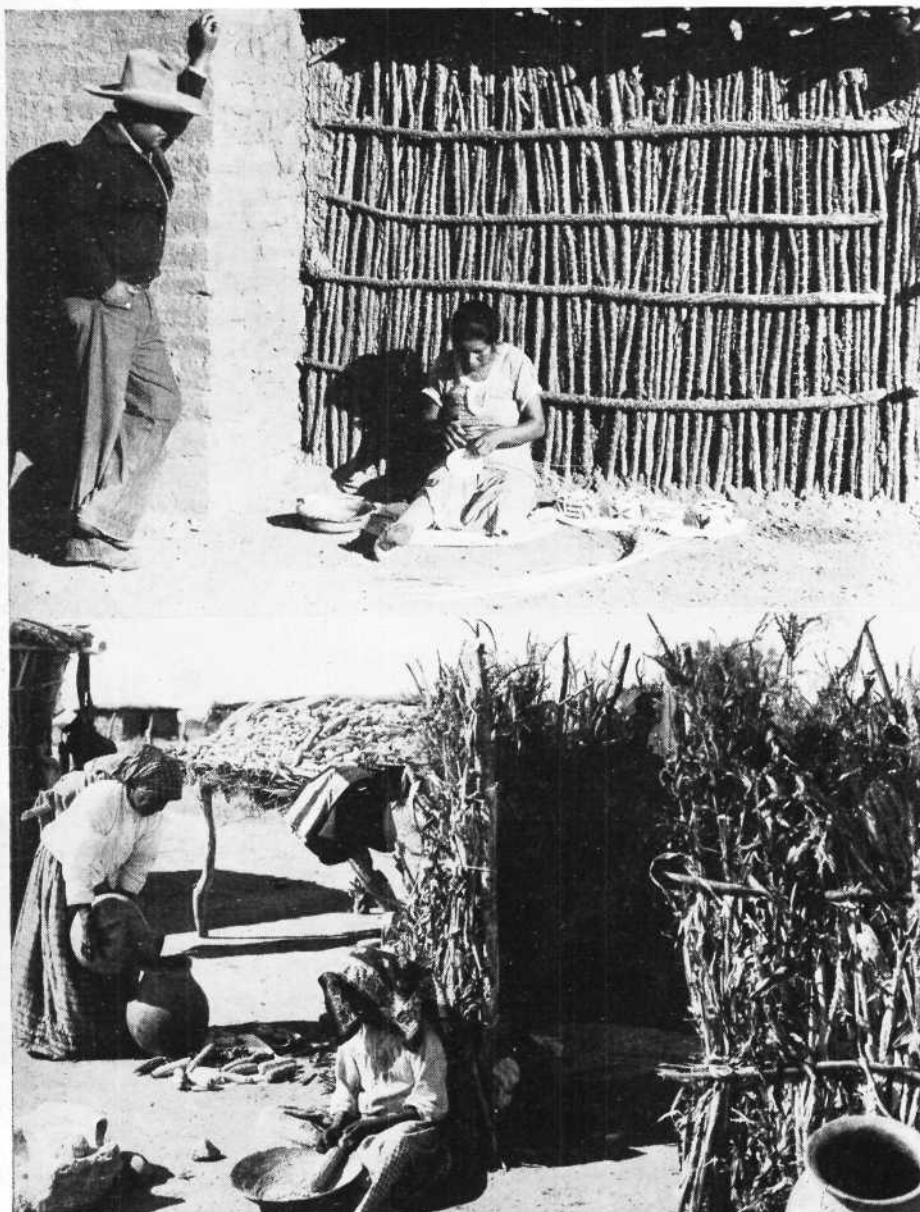
The corner where we sat was given over to basketry. Hanging from the rafters were big bunches of yucca leaves split into suitable widths, dried and stored for winter use. Some of them were creamy white, others a pale green and yet other bunches a deep, almost olive green. Masilla explained they had been gathered at different times in the spring. That explained the varying color.

Grotesque bunches of entwined martynia, the black horned devil's claw, swayed with each breeze. It was not necessary to do much tying of that stuff. The claws caught and held each other firmly. Each claw when soaked for the proper length of time would yield two or three eight inch strips of unfading black with which to make the figures woven into every Papago basket. Sunk into the floor by her mat were three stone metates filled with ever damp sand. Here the basket material was placed to keep damp and pliant while Masilla worked.

Papago baskets are unlike those of any other Southwestern tribe. Materials are hard to get for fine weaving, and so the yucca leaf is utilized to cover rolls of bear grass. All of their work is coil construction. Their baskets are popular because they are less expensive than finer baskets, they will stand hard usage as wood baskets, waste baskets, sewing boxes and trays for bread and silverware. One great advantage of many of them is their lids. These lids are skillfully woven to fit and are held firmly in place by a loop of yucca over a knot of the same material.

No artificial coloring is used in them. Besides the varied colors of green yucca, only black decorations are added. These figures often represent the horned toad, or dragon fly, mountains and pine trees, Greek keys and now and then a figure I've never been able to identify. It could be an antelope.

A few years ago the tribal council voted \$4,000 as a revolving fund to be used in the marketing of Papago wares. One of their own tribeswomen handles the business. She goes to the homes of the basket makers all over the reservation, driving a small truck, or if the roads are too bad, a wagon, and collects their baskets. She pays a fair price for them, suggests sizes and



Upper—Masilla and her husband Juan before their home of adobe and ocotillo stalks. Masilla is skilled in the ways of white man and red. Having studied nursing in an eastern hospital she volunteered for overseas duty during World War I. After the war, she returned to her people and developed to a high degree the skills for which they are noted.

Lower—Papago women shell the varicolored Indian corn and store it in jars they have made. More corn is piled on the raised "crib" in background, to protect it from mice and other small desert animals. At lower left is grinding stone in which corn is crushed to meal.

shapes that are in demand. She also buys the big earthen water jars called *ollas*, which are used so extensively on the dude ranches in that country. The men do leather work in their spare hours. This is sold along with the work of the women. For a time the fund was "in the red" but now more orders come into the arts and crafts board than can be filled. Masilla had about a dozen baskets ready for the collector.

One end of the ramada was given over to cooking and eating. A big open fireplace was surrounded by cooking pots, both iron kettles and home made pottery bowls finding their place there. On the rafters hung strings of red peppers, dried beef, various desert herbs and a sack filled with flour made of mesquite beans. Masilla said that mesquite bean flour gave a superior flavor to stews and gravy.

One of her own 10-gallon ollas held her water supply for the kitchen. It was firmly set in the crotch of a three forked post sunk in the ground. A woven lid covered the water jar and a pottery dipper lay on top of the lid. Sides of the big jar were wrapped with burlap and through this covering the slow drops of evaporation seeped and dropped into the broken pot at the foot of the post. This pot held a sturdy gourd vine which twined around the post and then wandered on up to ramble among the rafters overhead. It was heavy with queer shaped gourds, which I had no doubt would appear as brightly painted rattles at some tribal ceremony.

On wires stretched from the ramada to the adjoining corral strips of beef were turning into jerky in the hot dry air. This is the only way of saving meat in the summer time. When it has reached the stage of flint like hardness and the color of asphalt pavement it is ready to store in sacks tied to the rafters.

The collector came and took the baskets while Masilla and I were preparing to go out to the saguaros to look for ripened fruit. It had been planned we would gather what could be found nearby and Masilla would show me how it is turned into the most important "sweets" on the Papago menu.

Papago land is the home of the giant saguaro cactus. Its arms go up to a height of 20 to 40 feet. On the tip of each one is a cluster of waxy flowers. When the flowers dry up a little "apple" or "tuna" develops and by the middle of June it turns red and is ready to be harvested. Little work is done on the reservation during the week or ten days the cactus fruit is in season. If the village is not surrounded by the cactus forest, whole families move to the southern slopes of surrounding hills and garner their share. By a sort of gentleman's agreement each family has a certain



Masilla's girls—as eager as white children when adventure calls.



Papagos spend little time indoors. Most of their activities are carried on under shaded ramadas or in little enclosed courtyards made of ocotillo stalks.

portion of these plants which no other family must molest.

While Masilla put away her basket money and got a water tight basket for the fruit, her husband Juan came in from his planted fields.

"I must go up in the hills to look after the charco. Why not take our friend and the girls and gather fruit up there while I repair the dam?"

The three bright eyed girls began to jump up and down and implore their mother to go, just like white children do. I made no objections. After all, this was the "Land of Mañana" and other things could wait. Already I had the desert-bred feeling that there was no use to hurry through life.

Half an hour later Juan, Masilla and I

sat on the high swaying seat of the wagon. Juan was long-legged enough to brace himself on the front of the wagon bed, but the short Indian woman and the not-so-tall I dangled there with no support. We clutched each other when a wheel dropped into a hidden coyote hole, and practically sat in Juan's lap when our side of the road was much higher than his. On an old quilt in the wagon bed the girls giggled and shrieked with laughter at our discomfort. Two of the imps were definitely daughters of Juan and Masilla, having the wide intelligent eyes of their mother, but the third puzzled me.

"Where are her folks?" I asked under cover of the giggling.

"Dead," Juan answered simply. He seemed to think that told the whole story,

but Masilla explained that the father died of a fever and the mother was bitten by a rattlesnake while gathering bear grass for baskets.

"She was my friend. I wanted to take her to the white doctor but she begged to go to the medicine man. It was hours before we found him. He chewed up greasewood leaves and put them over the fang marks and then took the tail feather of a buzzard and dipped it into sacred meal and ashes. He made a mark all around her wrist and told the poison not to go beyond that mark. Then he split the feather and tied it on the other wrist for good measure. In a few hours we buried Matilda, and I took her baby girl home with me." And so another daughter was added to the household because those big hearted desert dwellers took a little motherless child home with them for the night and just forgot through all the years to send her away.

I knew how badly Masilla felt about the needless death. She herself was a nurse. Some club women had seen the beautiful girl while she was in school and asked to bear the expense of nurses' training for her. She was sent to a great eastern hospital and when World War I came Masilla volunteered for overseas duty. She served well but when she returned to this country she firmly refused to accept further employment.

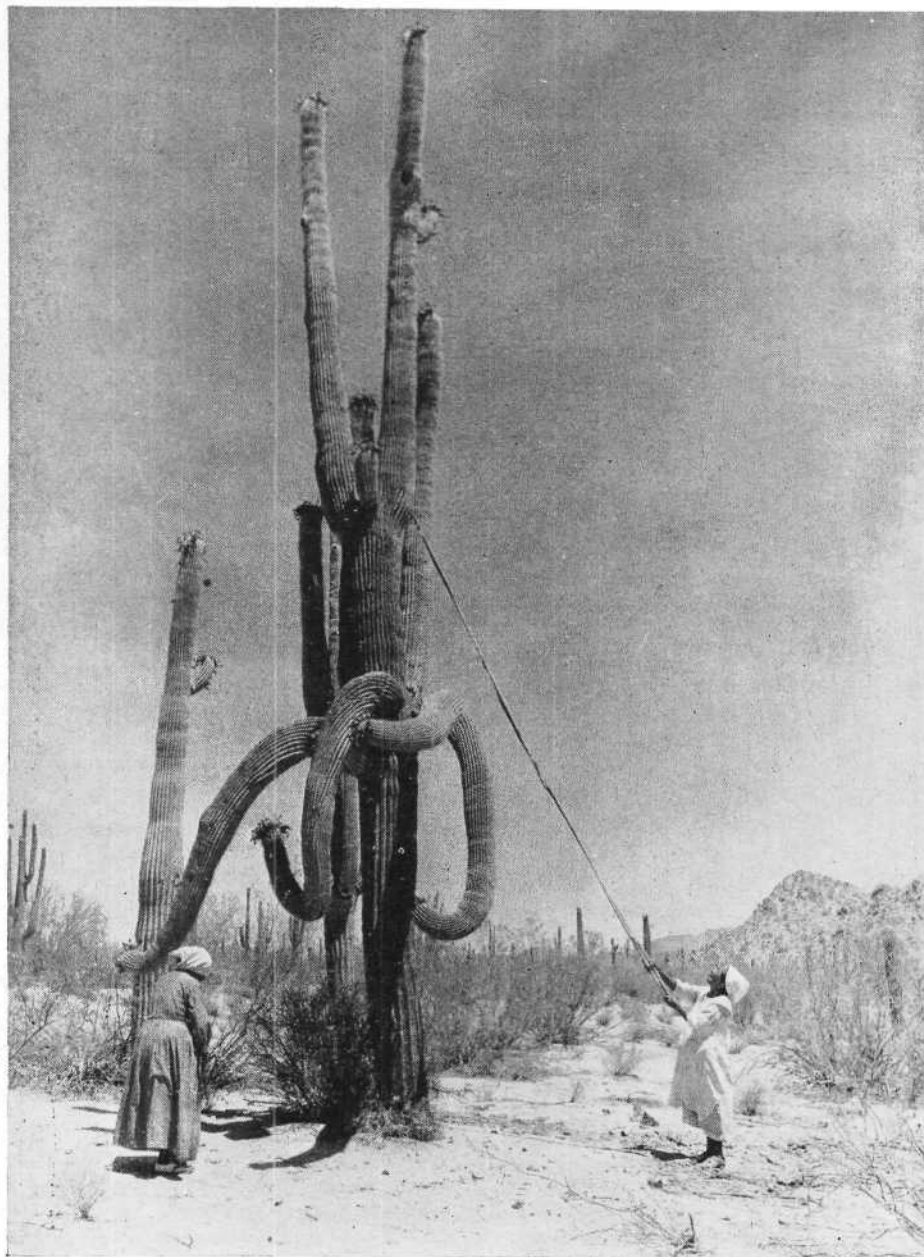
"I feel that I have paid my debt to the good white women who sent me to school here. I've seen what your civilization amounts to and I'm going back to my 'heathen' people. I'm going home where I belong!" And that was that. Except—that only her own people know of the lives she has saved among them with her skill and care.

On the grave of their adopted daughter's mother each Poor Soul's Day in November, Juan and Masilla place colored paper flowers, bowls of choice Papago food for the spirits, and a lighted candle at the foot and head. At midnight they sit beside the grave and eat what food is left by the spirits and tell the mother all about how good and beautiful and happy her child is with them. Yes, Juan and Masilla are "heathen" people.

We passed several families already encamped and gay greetings were called back and forth. Many of them were directed at me. "Can you climb a saguaro? Want to pick fruit for us?"

"Don't mind them," counseled Masilla. "They are remembering the New York woman who ate an apple from the prickly pear cactus. She didn't stop to peel it and for days she went among us sticking her tongue out so we could extract stickers!"

We made camp beside a big palo verde tree not far from the charco. I set my folding cot up and placed the bedroll on it so I'd have first chance to occupy it. There were too many sidewinders and scorpions



During the week or ten days the saguaro cactus fruit is in season little work is done on the Papago reservation. Whole families move to the slopes of surrounding hills to gather the crimson tuna fruit. Bamboo sticks are put together to form a long pole to reach the tunas growing at the tips of saguaro branches 20 and 40 feet high.

around there to suit me. The girls would sleep nearby and Juan and Masilla had their bed in the wagon.

Juan took a bundle of bamboo sticks from the wagon and put them together to form a long pole with a sort of shepherd's crook on one end. This was entrusted to me as my share of the equipment.

Masilla carried a water tight basket to collect the pulp and we induced the girls to carry extra baskets although we didn't expect much help from them. They were scampering around like excited puppies.

We started up a steep slope on which many of the giant cactus grew. I was all for beginning on the first red cluster of fruit I saw gleaming richly in the sunlight.

"Just like a white woman," teased Masilla. "Why gather that fruit just to carry it all the way up the hill and back down again? We'll start picking at the top and work down. Just like a white woman!"

I picked myself out of a clump of cat's claw where I had been hurled head over heels by the tripping pole.

"Well, it's *just like an Indian* to put this darned pole together at the foot of the hill when it isn't going to be used 'til we reach the top!" Then I pulled the joints apart and lumbered up the hill behind the laughing Masilla. She was a beautiful Indian woman. Her eyes were soft and kind, and the brown smooth skin took on new beauty from the purple scarf she had tied around her thick black hair. Masilla was a wise and happy woman, here among her own desert people.

Our first cactus was about 25 feet high. Masilla stood above it and with the re-assembled stick hooked the reddest fruit from the cluster. It fell with a splash onto to clean canvas spread at the foot of the plant. When the cluster was robbed of all the red tunas, we began to work. Masilla took the bursted ones and scooped the pulp into her water-tight baskets. The whole skinned ones I slit with a short knife and then spooned the contents into the basket. The girls didn't do anything except grab the plumpest fruit and eat the pulp. They got rid of the seeds in much the same manner small darkies dispose of watermelon seeds.

When all the fruit was worked, Masilla went over the ground and carefully turned every skin so the red side was up to the sun.

"So it will rain soon," she explained, answering my questioning look.

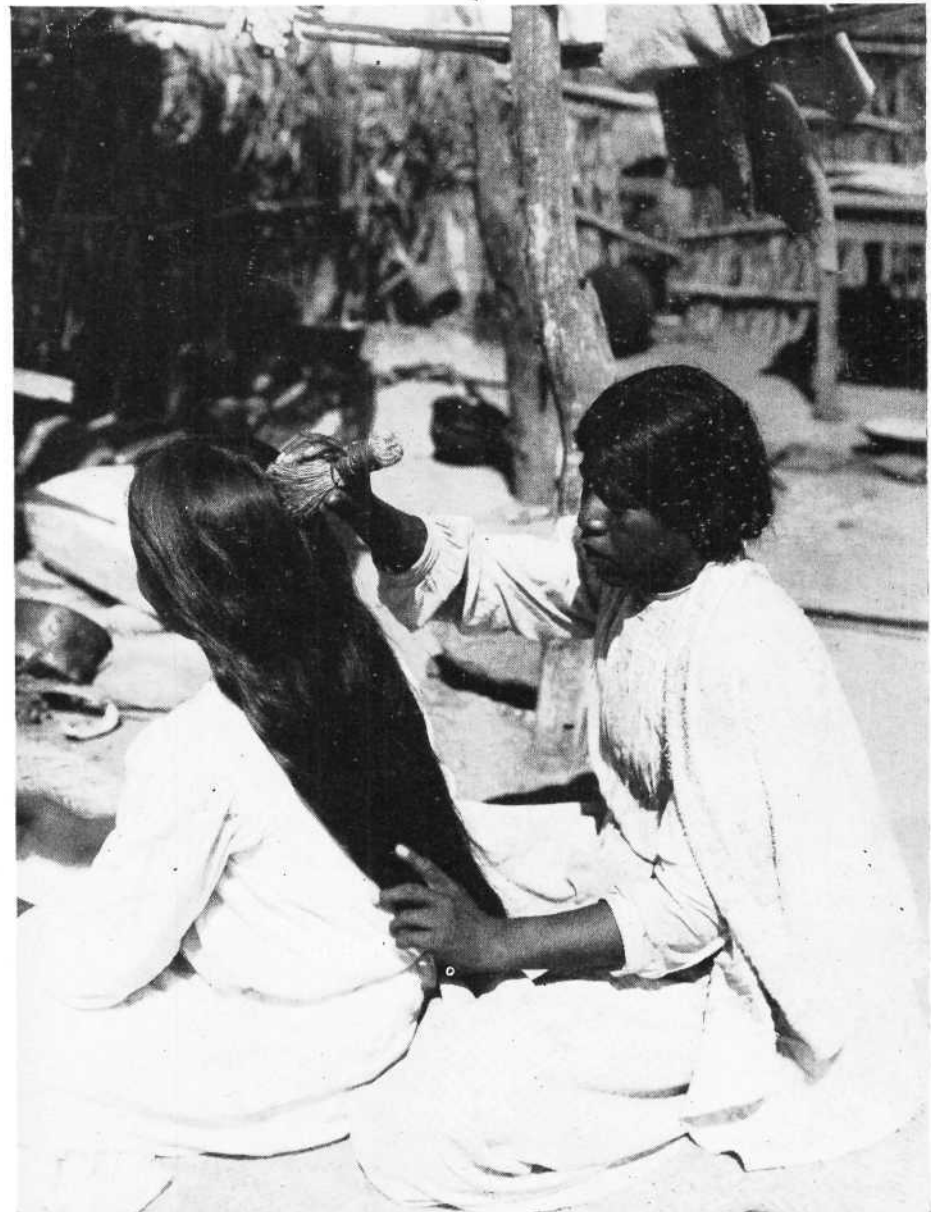
We went from plant to plant following the same program. I could see how much easier it was for Masilla to work downward. The fruit was easier to see from above and much less difficult to reach.

The baskets grew heavier with the pulp and each step brought us nearer camp where we could rid ourselves of the burden, and wash the sticky dust off our faces and hands.

Masilla emptied the pulp into a zinc



No artificial coloring is used in decorating Papago baskets. Varying shades of the yucca leaf are livened by the black devil's claw woven into such figures as the horned toad or dragon fly, mountains and pine trees. This basket maker sits on a mat made of yucca leaf fiber. Baskets are marketed through a tribal cooperative.



The morning toilet. Papago women seated on yucca mat in a courtyard. The "brush" is home made of coarse fiber.

tub, and from the charco brought enough water to fill it. Next morning she stirred the mixture a long time until the pulp and seeds were separated. She put the little girls to picking out the seeds which they washed and spread in the sun to dry. A close watch was kept because all the little hungry desert animals thought it was a special picnic prepared just for them. And a noisy blue fronted Steller jay swooped down time and again to try to grab his share.

Masilla said the seeds would be put away until winter, and then when other good things to eat were scarce, she'd pound them very fine in her stone metate and make a thin bread of them. It sounded much like the method of piki-making the Hopis use.

Over a fire of desert wood she put one of her cooking pots, an earthen olla, and poured the pulp and water into it and

boiled it for some time. While it cooled we visited another section of her orchard and gathered more fruit. The sun was hot and I was tired and thirsty and afraid of snakes, but pride kept me with Masilla while she worked another ridge. The fruit was ripening rapidly now and must be gathered before it burst atop the plant. Then it was useless to try to rake it off. When she started out on the third trip I gave the "rake-off" stick to the older girl and I relaxed on the cot beneath the tree. All around me the desert was humming and stirring with its dozens of small children. Rock squirrels and little mice ran countless errands, all kinds of bugs trudged over roots and around rocks. A woodpecker worked tirelessly boring a hole in a dead saguaro close beside me.

When I awakened, Juan was home from his work and the cactus fruit pickers were busy getting supper at the camp fire. I

watched the family. They had no need of a roof over their heads, or the futile things the white race have tried to teach them. The desert is their home and can supply their every want.

Mesquite beans furnish them flour for bread. Leaves from the creosote bush give tea for drinking, for making a cough syrup, and for use as an offering to their gods.

From the cholla cactus they gather the flower buds and dry them. Later these are added to other greens and herbs and made into a stew. The cholla buds thicken the mixture somewhat like gumbo. Pepper pods from another shrub are cooked with the wild meat they make into stews. Once wild hogs were plentiful on their reservation. Deer and antelope still can be found.

All sorts of cactus furnish fruit for them. The organ pipe has tunas somewhat like those of the saguaro, two crops a year, but the plants are not as plentiful and the fruit is harder to collect. Fat juicy leaves of the devil's tongue or prickly pear are roasted and skinned and are delicious. "Whatever comes to the rest of the world, the desert home of the Papagos will endure," says Commissioner John Collier, "because the Papago people live in harmony with their desert surroundings, getting from them a vitality, a beauty, and the very fineness of their habitat."

When the cactus crop was gathered Masilla poured the boiled pulp through a coarse strainer made of woven yucca. She put the juice back into the olla for the time being. The pulp went back on the fire and was cooked down into a thick jam.

Since I could not stay long enough to see the finish of the preserving I asked Masilla to tell me the rest.

"I've told you what will happen to the cactus seeds. And you've seen the jam made. It's already pretty sweet but if we are lucky enough to find the honey cache of wild bees I'll add some honey to it and some of the juice and that will make more jam. Then it will be put into ollas and covered with melted beeswax and swung from the rafters so nothing can get into it.

"The juice will be boiled down until it is thick enough to use as syrup. It too will be put away in ollas, with cloth tied over the top, to keep mice and children and ants out of it." This she said very seriously.

"Part of the syrup is put into the community collection to make the fermented drink we use when the celebration of cactus harvest is held. That drink is called *navai't*, and the drinking of it will please the rain gods so much they'll empty the clouds on our land."

I left Masilla getting ready to seal her cactus jam.

HOPI GODS IN COLOR . . .



A TREASURE FOR YOUR DESERT LIBRARY . . .

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DESERT CRAFTS SHOP

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EL CENTRO, CALIFORNIA

Gnomes of the Desert Night

Into the night world of bat and owl and moth, over the starlit desert dunes, emerge myriad creatures that live and die in darkness. By sunrise all life and movement have disappeared—only dusty footprints, ghostly skeletons, scattered feathers remain. To catch but a fleeting glimpse of these desert dwellers requires long patience and a skillful setting of the stage. For more than a year George Bradt and his wife spent week-end evenings exploring with camera, flash-gun and trap in order to record a bit of the strange nightlife of four of the desert's rodents. Each has a personality of his own. None has the characteristics despised in the "foreign" house rat or mouse.

By GEORGE McCLELLAN BRADT
Photos by the author

ON THE dry and treeless deserts of the great Southwest, nocturnal animal life assumes an intensity and proportion hardly equaled elsewhere in temperate North America. Over the starlit sandy wastes birds and beasts and reptiles creep and crawl and run and fly in their unending search for food. In rocky crevice and maze-like burrow they sleep away the sun-drenched days. Only at nightfall do they emerge to lead their vivid lives on the still and shadowless desert. By sunrise all have disappeared leaving as evidence of their secret existence only dusty footprints, ghostly skeletons, scattered feathers. There is the fantastic night world of bat and owl and moth, of



Kangaroo Rat. Despite its marked resemblance to its Australian namesake, the handsomest North American rodent.

nocturnal mammals large and small, of the myriad hungry creatures that live and die in darkness.

In any given desert region, whether arid plain or mountain foothill, the commonest small mammals encountered are rodents. Throughout the Southwestern states, Pocket and White-Footed Mice, Kangaroo and Wood rats are the principal nocturnal forms.

Individual representatives of each genus are frequently found within a single limited area. From sea-level to altitudes of well over a mile, wherever the food supply is sufficient for their voracious vegetarian appetites, these interesting rodents are relatively common. Their strictly nocturnal habits, however, make them exceedingly difficult to observe. Considerable patience and long acquaintance with their peculiar mode of life are necessary if one is to catch even the most fleeting

glimpse of these fascinating desert dwellers.

To record a bit of this strange night life, my wife and I over a period of a year spent weekend evenings exploring with camera, flash-gun and trap a small section of Texas desert some 25 miles east of El Paso. For our "province" we chose a rocky Hueco mountain foothill and the mesquite-covered desert flats surrounding it. Yucca, creosote and cactus clothed our hill's steep sides. Its ancient weathered limestone was honeycombed with tiny caves ideal for rodent homes.

Our first nocturnal acquaintance was a diminutive Pocket mouse. It was towards the end of October that we surprised this astonishing, long tailed, night-loving creature hunting its dry seed supper at the base of a rocky wall near the top of our desert hill. So strange in appearance and actions was the earnest little fellow we de-



Upper—Pocket Mouse. When this earnest little fellow has his fur-lined cheek pockets full he looks as if he were suffering from a violent case of mumps.

Lower—Wood Rat. Desert Trader or Pack Rat is an inquisitive kleptomaniac with a "conscience."

cided a photograph would not be enough—we must capture it alive. Before leaving for home we baited a small, wire mesh box trap with a piece of walnut and left it among the cacti and grasses of the night-shrouded hillside. Early the following morning we returned to find sleeping peacefully in the trap the olive-grey mouseling.

These attractive mice (Genus *Perognathus*) are principally characterized by their external, hair-lined cheek pockets. On either side of the lower jaw and extending up into the mouse's cheeks are the two extremely functional pouches which enable it to carry tremendous amounts of seeds to hidden subterranean storehouses. A

mouse with its cheek pouches full looks as if it were suffering from a particularly violent case of mumps.

With the mouse safely in our hands we could examine it at close quarters. Its long whiskers, long hind feet and longer tail, small ears and short forelegs gave it an outlandish appearance. So unconcerned at our presence was our tiny captive we were able to handle it and even take its measurements. From sharp nose to tip of well-haired tail he (it proved to be a male) measured seven inches. His peculiar caudal appendage accounted for four of the seven.

After he had been taken home he was given a small wooden box with a wire front for a home. Because Pocket mice are

essentially fossorial we gave ours some cotton in which to burrow. During the eight months which followed he lived in this snug home on a shelf in the kitchen. Feeding him was a simple matter. Canary bird seed was his nightly fare. All other food he scorned. He even refused water. Never during his entire captivity did he have a drink. Yet on the summer evening that we freed him he was as healthy and as sleek as when first caught. The desert is dry but not half so dry as a Pocket mouse.

Over two months passed before we met our second mouse model. On a cold clear January night when Orion was high in the eastern sky we found a little fawn-colored animal scampering along the very same rock wall where we had "flashed" *Perognathus*. Its great dark ears, long thin tail, and immaculate white underparts proclaimed it a White-Footed mouse. Although not a rare member of the desert's nocturnal population we hastened to photograph and capture it alive.

These dainty, well proportioned mice (Genus *Peromyscus*) do not hibernate, as do many of the diurnal rodents, but are active throughout the year. This characteristic they share with the Wood and Kangaroo rats and Pocket mice. The members of all four genera are, in addition, strictly terrestrial, never adopting the subterranean life and habits so typical of the Pocket gophers. The night rodents use their rocky caves and sandy burrows only as lightless retreats wherein to pass the sunny days.

White-Footed mice also are known as Deer or Vesper mice. They range from the Arctic Circle southward, and may be encountered almost everywhere in the United States. The slightest acquaintance with these attractive native mice will do much toward dispelling man's seemingly natural aversion to rodents in general. White-Footed mice are clean and gentle, and neither in habit nor appearance resemble the deservedly detested House mouse. This latter foreign beast not only lacks the contrasting bicolor pattern of the Deer mouse's upper and under parts, but has brownish feet and a semi-naked tail whereas the Deer mouse's feet are white and its tail fairly well-haired.

Our captive mouse was but one inch longer than the Pocket mouse. Half of its total length was tail. While a seed eater like *Perognathus* it did not possess the same handy cheek pockets. We kept him a month before returning him to his ancient hill.

Not until June, with its warm nights and white yucca blossoms, did we succeed in photographing our third nocturnal subject—a black-eyed, soft-furred Wood rat.

Often called Pack or Trade rats, the members of the Genus *Neotoma* are beautiful animals—their undeniably rat-like

appearance notwithstanding. Hairy tails, slate-grey or buffy fur, clean white underparts and feet, serve to distinguish them from their ill-favored European relatives. Like the other night-living rodents, Wood rats are rather easily tamed. But when first caught they are likely to put up a good fight—one which will result in a well bitten finger or two unless heavy gloves are worn.

As all who have lived around mining camps or ranches know, the inquisitive Pack rat seems given to a peculiar "collecting instinct" which prompts it to carry off any and every small shiny object found lying about. Usually in place of the collected item these appealing rodent kleptomaniacs leave a small pebble or twig—almost as if to "even things up." This strange trading habit has given rise to numerous Western yarns. One of the most enchanting of which has it that in place of a tenpenny nail one generous rat left a nugget of gold!

Wood rats, especially in arid cactus regions, usually are found living in large conspicuous nests composed of coarse sticks and built about the base of a spiny cholla or prickly pear. In the mountains they make their homes in crevices and small caves. The entrances are protected by masses of cactus lobes and pads. While exploring a cave in Arizona for Indian artifacts I once had the bad luck to step into one of these cactus filled entranceways. The pile of cholla was so deep that I sank into it well above the knees. Several miserable days passed before I had removed the last of the barbed spines. It would be a hungry enemy indeed foolish enough to try to enter such a cactus-armored home.

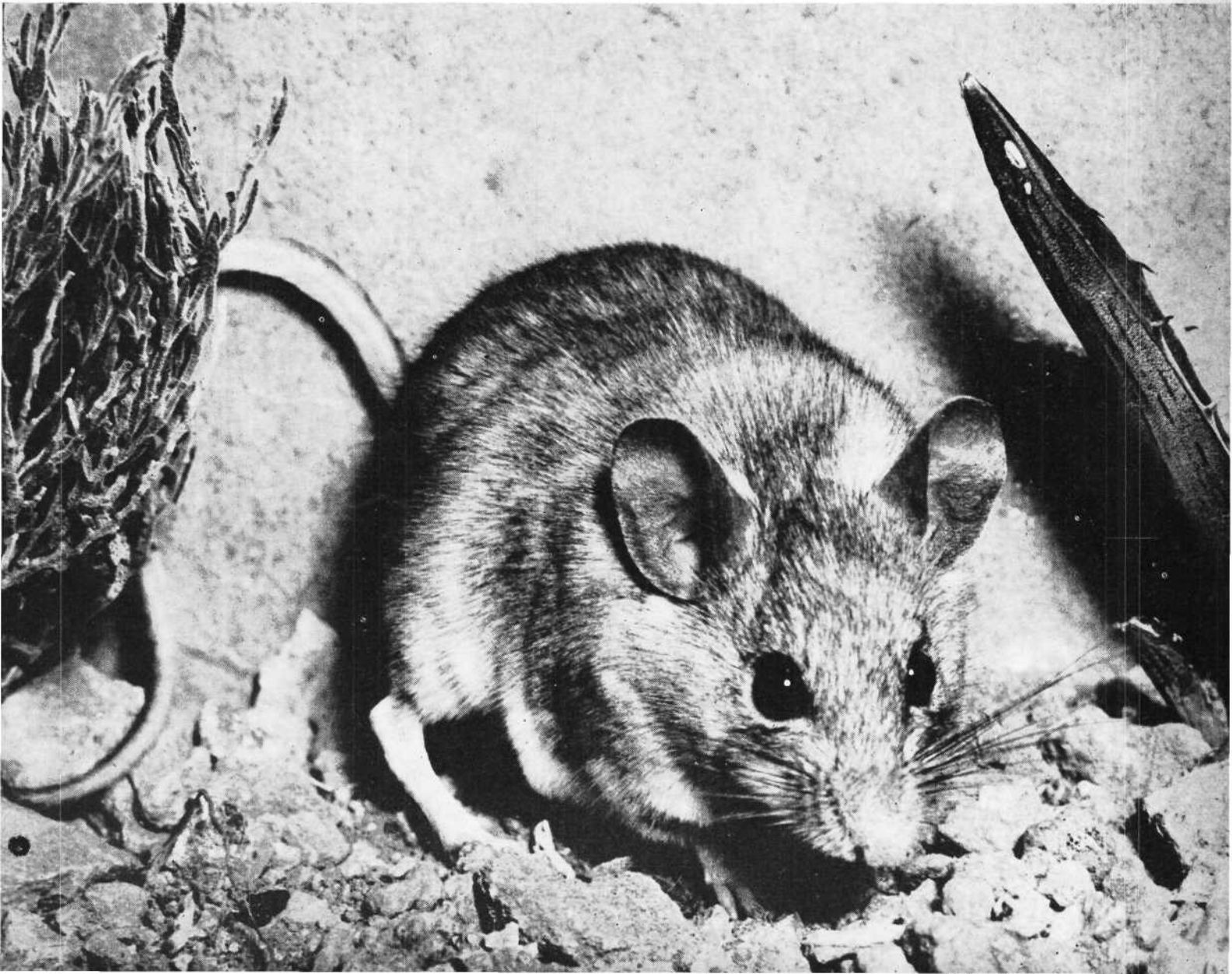
Our captive Wood rat was "shot" within a few feet of the spot where we had met *Perognathus* and *Peromyscus*. Before we freed her we found the total length to be 13½ inches, her tail six. In May, June and October we found immature Wood

rats. One young rat we kept captive a few days. Much of the time it spent standing on its hind legs, all the while emitting a shrill, high-pitched, cricket-like song. Young or old the curious Pack rat is a fascinating creature whose acquaintance is well worth making.

From that autumn night when we first discovered the Pocket mouse it was 11 months before we finally completed our photographic series on the nocturnal rodents by finding the occupied burrow of a Kangaroo rat in a low sand dune on the rolling desert below our hill.

Of the four rodents we encountered this last was by all odds the strangest. Belonging to the Genus *Dipodomys*, this small, beautifully marked rat is best known for its great hind legs and feet, and long tufted tail. Large eyes, small ears, and a distinctive band across each thigh completes its picture. Over the pale sands it travels by means of long and high kangaroo-like jumps, its tail acting as a sort of balance

*White-Footed Mouse. Gentle unmouse-like member of the desert's rodent population.
Also called Deer or Vesper mouse.*



or rudder, its short forelegs seldom if ever touching the ground. Like its near relative the Pocket mouse it possesses the same type of invaluable, fur-lined cheek pockets.

We located the Kangaroo rat's home by the telltale, crisscrossing foot and tail prints which invariably radiate from the entrance of an occupied burrow. As Kangaroo rats seem to have a surprisingly unsuspecting nature it was a comparatively easy matter both to photograph and capture our particular model.

As a pet it showed neither fear nor aversion to being handled. This enabled us to measure and examine freely the handsome cinnamon-colored creature. From tip of inquisitive bewhiskered nose to end of dusky-tufted tail it measured nine inches. Its amazing tail accounted for five of the nine. Its oversized hind feet each measured one inch in length and had but four toes apiece, to boot! Many species of *Dipodomys* evince this strange absence of the "great" toe.

During the four months that we kept our rat its steady diet was bird seed and lettuce. It drank no water. The lettuce probably supplied all the moisture its drought-inured system required. After several weeks in captivity we noticed that its soft fine fur was becoming increasingly matted and oily. Thinking that its artificial, cotton-lined home might have something to do with this condition we decided to transfer the rat to a larger box, partially filled with dirt and small stones, which would more nearly approximate its natural surroundings. Immediately upon being placed in this new home it started scooping up the loose dirt with its forepaws and kicking it out of the way with its hind ones to form a shallow trench. In it the determined creature began rolling over and over. This was what it had wanted all along—a dust bath! After a few of these "treatments" its coat regained its original softness and glossy sheen.

When it came time to free our little captive we were so reluctant to sever completely our interesting friendship with this trusting desert citizen that we built a cozy box-burrow for it in the middle of a narrow strip of wasteland a few hundred yards from our home. In it the rat now sleeps away the sunny days and comes out only after sundown to collect and store the bird seed we leave for it each night. In return for its "board" our rat neighbor acts as official tester for new methods of photographing rodents and of trapping them alive. Our partnership has proven a most satisfactory, albeit novel, one!

DESERT QUIZ

Here's another test for all those enrolled in Desert's School for Desert Rats. The tenderfoot may find it difficult but he will be able to add more information to the desert lore already learned from previous monthly quizzes. The average Desert Rat should make a score of 10. Fifteen right answers will graduate him to the exclusive upper class set of Sand Dune Sages. Answers on page 35.

- 1—"Nevada Black Diamonds" are— Low grade native diamonds.....
Obsidian..... Smoky quartz crystals..... Perlite.....
- 2—Flint and obsidian implements of the desert Indians usually were made by—
Applying pressure to edge of rough flint with point of deer antler.....
Heating the flint and touching the edge with cold water.....
Grinding edge on a flat stone..... Using a crude stone tool as a chisel.....
- 3—The Colorado river tributary which Powell named the Dirty Devil river, is now known as— Fremont..... Henry..... Hassayampa.....
Bill Williams.....
- 4—Acoma, the "Sky City" is located in— Zuñi Indian reservation.....
Navajo reservation..... Laguna reservation..... Isleta reservation.....
- 5—If you were traveling through Arizona on Highway 66 you would pass through which of these towns— Phoenix..... Holbrook..... Prescott.....
Nogales.....
- 6—The age of Chetro Ketl ruins in Chaco canyon, New Mexico, is estimated by scientists as approximately— 300 years..... 900..... 1500..... 2000.....
- 7—Rainbow Bridge, Utah, was first discovered by white men in— 1908.....
1899..... 1913..... 1922.....
- 8—Fortification Hill may be seen from— Boulder dam..... Phoenix.....
Las Cruces..... Randsburg.....
- 9—Gypsum cave in southern Nevada is famous for its— Unusual gypsum crystals.....
Ground sloth remains..... Outlaw hideout..... Hieroglyphs.....
- 10—Geologists believe the age of the fossil oyster beds in Yuha basin, southern Colorado desert in Imperial Valley, is at least— One million years.....
Nine million..... 17 million..... Ten thousand years.....
- 11—Gadsden Purchase of 1853— Added territory to Arizona and New Mexico.....
Formed the northern section of Lower California.....
Represented a government settlement with Navajo Indians in New Mexico.....
Included southeast New Mexico oil lands.....
- 12—Arrastra is— Old Spanish mill to grind corn..... Primitive club-like weapon for hunting rabbits.....
Device to crush ore..... A Spanish unit of land measure.....
- 13—Mukuntuweap is— Name of Ute Indian chief..... A river in New Mexico.....
Former name of Zion national park..... Ceremonial god of the Hopi Indians.....
- 14—According to legend the Lost Dutchman mine of Arizona is located in the—
Harqua Hala range..... Superstition mountains..... Castle Dome mountains.....
Santa Catalina mountains.....
- 15—Most complete study of Death Valley flora was written by—
Edmund C. Jaeger..... Frederick V. Coville..... W. A. Chalfant.....
George Wharton James.....
- 16—If you owned a cinnabar mine with a mill for processing the ore you would ship your product to market in— Ingots..... Flasks..... Bags.....
Bales.....
- 17—The mescal plant which grows in the desert region is— Yucca.....
Barrel cactus..... Ocotillo..... Agave.....
- 18—"Children of God," by Vardis Fisher, is the story of— Navajo creation legends.....
Mormons..... Pioneers in the Apache country of New Mexico.....
Indian children in Southwest missionary schools.....
- 19—Walls of ancient cliff dwellings found in the Southwest usually are built of—
Rough hewn logs..... Stone..... Adobe bricks..... Sticks plastered with mud.....
- 20—One of these is an artist— Frank Hamilton Cushing.....
Edwin Corle..... Mary Kidder Rak..... Charles Keetsie Shirley.....



The tires camel For long anxious weeks the Souths were forced to delay their home-seeking, awaiting a size of tire which they were beginning to believe was now extinct. But still they linger in the little Utah valley—because of the kindness of Mormon friends. They are drying golden apricots in the desert sun—apricots which were grown in the tiny irrigated orchards extending along Utah rivers. But soon they will be on their way once more, to find their Shangri-La.

Desert Refuge

By MARSHAL SOUTH

THE MUSICAL *tonk, tonk* of bells across the desert silence. A wilderness frayed little burro train jogging out from between the creosotes and mesquites. Six well loaded pack burros and a couple of riders on wiry horses. One of them a slim girl in faded Levis and a bright red shirt; her companion a tanned young Arizonan, sitting his mount with the careless ease of a lifetime spent in the saddle. A sheep outfit headed into rough country where they could not take a wagon.

The slim girl was the boss' wife. And as we watched, the boss himself appeared, high up on the crest of a nearby rocky butte. He shouted and waved his hat to the riders below and they swung off, heading in the direction he indicated. From beyond the butte the dust of the moving herd smoked against the sky in a thirsty brown cloud.

We knew a little of the outfit. For the boss himself had talked with us the day before as he had been scouting ahead to pick the trail. They were from the Arizona Strip—that vast lonely empire that lies between the north rim of the Grand Canyon and the Utah line. Rugged desert people—product and part of the land where they lived. Weather tanned and reliant; totally unconscious of their picturesque blending with their desert setting. The slim girl in the red shirt was beautiful and she rode with an easy grace that suggested the slender branches of creosotes swaying in the wind. The burros trotted and bounced their packs and the bells tonked and the boss, from his lofty perch, yelled and pointed some more. Then they were gone, fading away into the dun distance and the dusty haze of the moving sheep. The red shirt of the girl vanished last, a brave moving spot of color dwindling and swaying away into the hot dust.

But did our tires arrive? They did. Our good friend in Arizona did not fail us. Glinting with all the haughty grace which only suddenly precious rubber can assume, our new tires, mounted and rearing to run, now reflect the desert sunshine with a radiance that is positively dazzling. The old car, heaved up from her slumped despondency, quivers with a joyous eagerness that waits only the word to go.

But sometimes one makes haste slowly. And our present tardiness recalls a story told me several years ago by Laurence M. Huey, of the San Diego Natural History museum. It was while he was on one of his scientific expeditions into the little known parts of Baja California that one day he and his party



DESERT ROADRUNNERS
BY RIDER + RUDYARD, AGED 9 & 5

met a Mexican family, moving with all their possessions across the desert, headed for a new home in distant Mexicali. Even the family cow was part of the caravan. But she was a leisurely creature and objected to desert travel in hot weather. Both the señor and the worthy señora were annoyed. "We make haste so slowly," they complained. "But what is to do? Can one leave behind a perfectly good *vaca* just because she will not hurry? She is of value." But they were irritated.

Three days later the San Diego expedition met up with this selfsame Mexican family again. Camped at a water hole. The cow had vanished. But draped over poles and stretched riatas and the limbs of mesquite bushes was an astonishing array of jerky, drying in the torrid sun.

"Ah yes," the señora explained, sighing. "Poor Carmencita. She became more lazy. And when we reached this water she would not leave it. And so my Juan, he decided—" She shrugged her ample shoulders and spread her hands in an expressive gesture of resignation. "But the *carne seca* will be good, señor," she added, brightening, as she indicated the drying meat. "Now we can carry Carmencita with us upon the burro and make much better speed. We have lost nothing."

Which is a parallel to our own experience. For here, in this sunny little Utah valley, where the industry of the Mormon pioneers has planted the desert with little irrigated fields of fertility, fruit flourishes. And a good friend presented us with a huge quantity of delicious apricots. Apricots are somewhat like the manna of bible days. Subject to spoiling. And the amount of ripe apricots that even Rider, Rudyard and Victoria can get away with is limited. So, like the owners of Carmencita, we found a happy way out of the problem. We sat us down to "jerk" our apricots. In other words we split them open and spread them out on improvised racks to dry in the hot desert sunshine.

With astonishingly satisfactory results. Unless you have tried it you have no idea how swiftly the brilliant sun and dry air of

the desert can dehydrate fruit. Three or four days, and before you know it your orange gold spread of nectar-filled sweetness has toasted up to an array of toothsome chewy morsels of a deliciousness that can only be realized through personal experience. The sunshine does something to the fruit—something which no system of artificial drying can do.

Now the apricots are about jerked—I mean dried. And soon they can be loaded, like Carmencita, and go along with us. Preserving food by drying has many advantages. Not the least being storage space. We used to do a great deal of drying on Ghost mountain. There, however, we had to take more precautions against our animal friends. There are not nearly the number of mice and pack rats in this section as at Yaquitepec. Drying racks on Ghost mountain had to be on unclimbable stilts. Otherwise we would have awakened in the morning to find that our entire day's work had been removed by our industrious little neighbors during the hours of darkness.

But the rays of the desert sun possess more virtues than the swift drying of meat and fruit. A surprising number of bodily ills, about which unhappy sufferers consult bewigged and be-whiskered specialists, show magical improvement when subjected to nothing more mysterious than a course of desert sunshine and natural living. Desert peoples, unless they have been utterly engulfed in the morass of civilization, are usually healthy people. Lean perhaps, and no strangers to the occasional pinch of hunger, they are nevertheless wiry and reliant and possessed of a fierce vitality which has enabled them time and again to sweep down and overthrow the dwellers of more "fertile" sections.

The sun long has had complete charge of the health of our own family. And does his job so well we seldom think about him from a health sense. Until something goes wrong. Such as a headache. Headaches are unnatural. No one should have a headache. And whenever we do get one we know perfectly well that it is our own fault. Fortunately they are sufficiently rare to make us a little proud of our diet habits. But on those occasions when we err, and nature tells us so, we promptly remember Dr. Sun, and carry the case direct to him.

The other day, having straved unwisely down the alley of some alluring "civilized" food, and having awakened with a throbbing head, I went to a convenient spot and stretched out upon the hot earth. There were no rocks big enough or handy enough. But the clayey soil was scorching enough, and soon I began to feel the tingling, driving sunrays chasing the pain waves out along my spine and out through my head and toes.

Rider and Rudyard had come along too. They never neglect any opportunity that promises interest or a chance for exploration. They brought along a shovel with the idea that it would be interesting to find out how far, in this locality, one might have to sink a well for water.

While I toasted they dug. They dug for quite a while without finding anything more interesting than a few fragments of charcoal that might or might not have been relics of some prehistoric Indian campfire. "Pouff!" said Rudyard at last. "It is too hot. And I think the water is deeper down here than it is at Yaquitepec." He scrambled out of the shallow trench and hot footed it for the shade of a high bank. Rider followed him.

Then we heard a mysterious "Carrook." A weird, throaty sound. It seemed to come from somewhere in a nearby shallow draw where thorn trees grew. And where, far beyond, the mountains swam in the heat like savage patterns sewn upon smoky gauze. "Carrook." A pause. "Carrook."

"A frog!" Rudyard whispered excitedly. "A bull frog!"

"Huff!" Rider scoffed. "What would a bull frog be doing here—unless he had an asbestos suit. What is it, daddy?"

But I didn't know either. The headache was about gone. And I was as curious as the youngsters. Cautiously we set out to track down the mysterious sound. "Carrook . . . Carrook . . ." The thing faded from us uncannily and elusively.

Then Rider suddenly spotted the roadrunner, an inconspicuous brown shadow, dodging furtively through the stunted bushes up a hot slope, and a moment later Rudyard's sharp eyes discovered the nest in a thorn tree. "Carrook" . . . the source of the sound was now unmistakable. But it was new to us. The roadrunner's vocabulary is extensive, and extended by flagrant mimicry. But we hadn't heard one dispensing that throaty croak before. We didn't bother the dodging mother bird as she slipped away up the slope. We were too interested in the nest.

It was like most roadrunners' nests. On a limb not too far off the ground. But it was exceptionally well defended. The parent birds must have spent much time in choosing their locality. No war-wise commander could have bettered the array of spiky defense which hemmed their rough nest of sticks on every side. It wasn't a hard tree to get up into—if it hadn't been for the thorns. But they were the vilest, spikiest, most vicious thorns we ever had seen. They jabbed and tore and stabbed at us along every inch of progress. When we finally did work high enough to get a glimpse into the nest it was at the cost of much shed blood. Some of the thorns drove deep in and broke off, and had to be dug out with pain and language, hours later.

There were five husky young roadrunners in the nest. Almost fully feathered. Hunched down, camouflaged by the patterns of their feathers against the mottled background of the nest, they regarded us with suspicious hostile eyes. There is something lizardlike and reptilian about a young roadrunner. If you ever should entertain any doubts as to the descent of birds from lizards a few minutes' study of young roadrunners in the nest would do much to dissipate them. And the bird has much more inherent savagery in it than you would suppose. At least in youth. The swagger and droll comedy affected by the adult birds are characteristics which come later.

Suddenly, to our consternation, one of the nestlings, with a low squawk of rage, or fear, hurled himself from the nest. To land with a thud upon the hot ground below. Captured promptly by Rider and thus saved from a blind staggering dash to death in the hot desert, it nevertheless threw us into a panic, for fear that the entire brood might follow its example. We withdrew hastily, blaming ourselves for our curiosity. But the question now was what to do with the prisoner. To attempt to put him back in the nest, by hand, might result in a general exodus of scared birds. This we dared not risk. It was a tough problem.

We solved the matter by taking "Snapper," as the boys named him, back to camp. There he was lavished with love and attention until next day, in a specially built nest all his own, in a specially built cage. But he would not eat. He snapped and chattered his bill at us. And pecked savagely. And glared and refused to be sociable.

It was with relief that we lugged him back to the nest the next day, by which time we judged the other young birds would have recovered in some measure from their fright. We returned him artfully. We tied a long strip of soft cloth to the end of a pole and wrapping the strip round and round Snapper's feet, with the end loosely secured, we hoisted him ignominiously by the legs up and over his nest. There, by a little jiggling and jerking we managed to shake the end of the wound cloth strip free. It unrolled and let Snapper fall into his nest. The other young birds never stirred.

PURPOSE

*Prepare your mind for tasks that must be done,
And hold it firmly on your chosen course.
Thus follow it. And let no rising sun
Find you unwilling. And let no remorse
Unset your purpose. All will make mistakes.
But they who seek will surely find. And they
Who place their goal upon the highest stakes
Will find God's will to guide them all the way.*

Tanya South

Golden Cassia

By MARY BEAL

SOME call it Cassia, others call it Senna, but under any name it becomes a superlative glory when late spring pushes it into the spotlight and keeps it there for weeks. For much of the year the rounded bushes are leafless, an inconspicuous part of the general desert background. During this dormant period novices sometimes mistake the shrub for Ephedra (commonly known as Desert Tea or Squaw Tea). The naked branchlets have a superficial resemblance to Ephedra's somewhat rush-like or broom-like stems and both plants form broad rounding bushes.

But spring brings no such Cinderella-like transformation to Desert Tea as the spectacular blooming of Golden Cassia. The old branches are more or less woody and dull greyish. Winter rains bring forth new pale blue-green shoots bearing a few dark green pinnate leaves, each of the new shoots terminating in a showy raceme of fragrant golden yellow flowers.

In years of average rainfall the bushes bloom with such profusion they are like huge golden bouquets. Where they are superabundant, as in certain parts of central and eastern Mojave desert, many shallow sandy washes debouching from the hills are like wide streams of gold pouring down slopes and across mesas. These sparkling freshets of brilliant color present a memorable finale to the pageant of spring flowering.

The genus Cassia is very large, chiefly of tropical and subtropical regions. A few of these exotic species are cultivated in the warmer parts of the United States as ornamental shrubs. The drug Senna is obtained from the dried leaves of certain African, Arabian and East Indian species. A species growing in the Middle West and eastern United States has been used as a substitute for these imported medicinal species.

The common desert species is:

Cassia armata

A much-branched shrub, 2 to 4 feet high, often twice as broad. Pale green stems appear smooth and bald but are covered by dense coating of short thick hairs closely appressed to stem. The few bright green or darker leaves are far apart, rather thick and fleshy, and soon fall off. The flattened rachis, 2 to 5 inches long, extends well beyond the 1 to 4 pairs of very small oval or roundish leaflets. The bright golden yellow corollas measure 1 to 1¼ inch across, the 5 widely spreading clawed petals regularly equal and finely downy. The slender yellow pods are cylindric or lance-cylindric, usually curving, 1 to 2 inches long. The bush in fruit, spangled with innumerable brightly colored pods, is almost as conspicuous as in flower.

Habitat—deserts of California, southern Nevada, and western Arizona.

Cassia covesii

Among the less common species. Named for Dr. Elliot Coues, best known as an ornithologist, this Cassia is markedly different from *C. armata*. A more herbaceous perennial, 1 to 1½ feet high, the whole plant white-hairy with dense covering of fine soft hairs. Leaves usually have 3 pairs of elliptic or oblong-ovate leaflets ½ to 1½ inches long. The yellow flowers, an inch or more across, with petals noticeably veined, are borne in short few-flowered racemes in the leaf axils up to the very tip of branch. The brownish pods are straight and compressed, about an inch long and rather wide.

You'll find this species in dry gravelly washes at moderate altitudes in New Mexico, Arizona, Nevada, and occasionally in the Colorado desert (Chuckawalla mountains) but considered rare in California.

In Arizona and as far east as Texas is found *Cassia baubini-*



Branch of Golden Cassia. Photo by author.

oides, another herbaceous perennial, the herbage softly hairy, the leaves with but one pair of leaflets and flowers all axillary. Dry rocky slopes and mesas up to 5,000 feet.

Cassia wislizeni

Much-branched shrub up to 5 feet high, with rigid branches and dark-colored bark. The thickish leaves persistent, with 2 or 3 pairs of small oval leaflets, veins usually thick and prominent beneath. The racemes are few-flowered, terminal and axillary. The flat pods are shiny black and up to 5 inches long, with a rigid short-pointed tip. Dry limestone slopes and mesas from southern Texas to southern Arizona and Mexico, at an elevation of 4,000 to 5,000 feet, blooming in late summer.

Cassia leptocarpa

Showy summer-blooming plant with large terminal many-flowered panicles of bright yellow blossoms. It is mostly herbaceous with woody base, the ill-scented leaves with 4 to 8 pairs of thin sharply-pointed, lanceolate leaflets about an inch long. The dusky brown compressed pods are not flattened and may attain a length of 9 or 10 inches. Along mountain streams and washes of New Mexico and southern Arizona, southward to South America.

Cassia leptadenia

An annual, blooming in late summer and fall. The erect stems are clothed with both short appressed hairs and longer spreading ones. The leaves carry 9 or more pairs of oblanceolate leaflets, margined by a fringe of long hairs. The rather small flowers have petals noticeably unequal and the pods are downy with appressed hairs. Dry mesas from western Texas to Arizona and Mexico.

When Charles Kelly started on the trail of primitive man between the red sandstone walls of northeastern Utah, he and his companion Frank Beckwith discovered a prehistoric masterpiece. The petroglyph, engraved in the red wall, shows that primitive man was little different from his modern brother—they both wanted to preserve the record of their hunting prowess, whether with stone etching tools or camera. Modern photographic records with luck may be preserved for a generation or two—but the record of the unknown hunter in Nine Mile canyon has endured for a thousand years.

We Found a Gallery of Indian Etchings

By CHARLES KELLY
Drawing by John Hansen
Map by Norton Allen

ON A hot day last summer, Frank Beckwith of Delta, Utah, and I were tramping down a long deep canyon following our hobby of photographing Indian petroglyphs. The canyon



walls had proved to be a remarkable picture gallery of prehistoric art and we already had photographed many interesting groups containing figures of men, animals, snakes, decorative designs and miscellaneous markings, most of which were meaningless to us. Late in the afternoon we came to a little side gulch which Frank turned to explore while I continued down the canyon. But I had not gone far when I heard him shout.

"Holy jumping cats!" he yelled, "here's a beauty!"

I walked back in the heat with some misgivings because Frank sometimes gets over enthusiastic on his pet subject. But

when I came up and stood with him before the red sandstone wall I had to agree that he had found a real prehistoric masterpiece. At least it seemed so to us because its meaning was so clear that we needed no rosetta stone to understand what the ancient artist was trying to say.

It was a hunting scene showing a flock of 30 mountain sheep including 12 small lambs. The hunter, assisted by two boys, all armed with bows and arrows, stood facing the flock, while prominent in the background was the medicine man who had furnished the hunting charms. It must have been an unusually successful

hunt, since the artist had spent many hours engraving a record of it on the smooth sandstone wall. Nowhere else had we ever found a single group containing so many mountain sheep. John Hansen's illustration shows the ancient artist completing his picture, an accurate reproduction of the original on the rocks.

To reach this canyon we had driven to Wellington, six miles south of Price, Utah, then turned left on the old stage road to Vernal in the Uintah basin. After following it about 40 miles we struck a creek, the upper part of which is called Nine Mile and the lower end Minnie Maud. The stream soon ran into deep Nine Mile canyon, which we followed to the Nutter ranch, where the road leaves through a side canyon for the Uintah basin. Leaving our car we started walking down the canyon, which runs into Green river several miles below.

We had found many petroglyphs along the road above the ranch, but they were more numerous below. In fact there were more in Nine Mile canyon than any other locality we had visited. That Indians had lived there in considerable numbers was proven by several neat little cliff dwellings and half a dozen fortified watch towers built at strategic spots in the canyon. We examined a number of caves, and all showed evidence of occupancy. In the bottom of the canyon was level ground suitable for the cultivation of corn, while nearby Uintah basin abounded in big game. The topography of the canyon was ideal for defense.

Petroglyphs on the canyon walls seemed to indicate previous occupation by at least three different cultures, all having left

records of their residence. Some showed evidence of great age, while others may have been made by Utes within the past hundred years, but the largest number appeared to have been made by the men who built the watch towers. Collectively they contained many representations of men, usually with ceremonial headdresses, but sometimes shown with spears and shields in fighting attitudes.

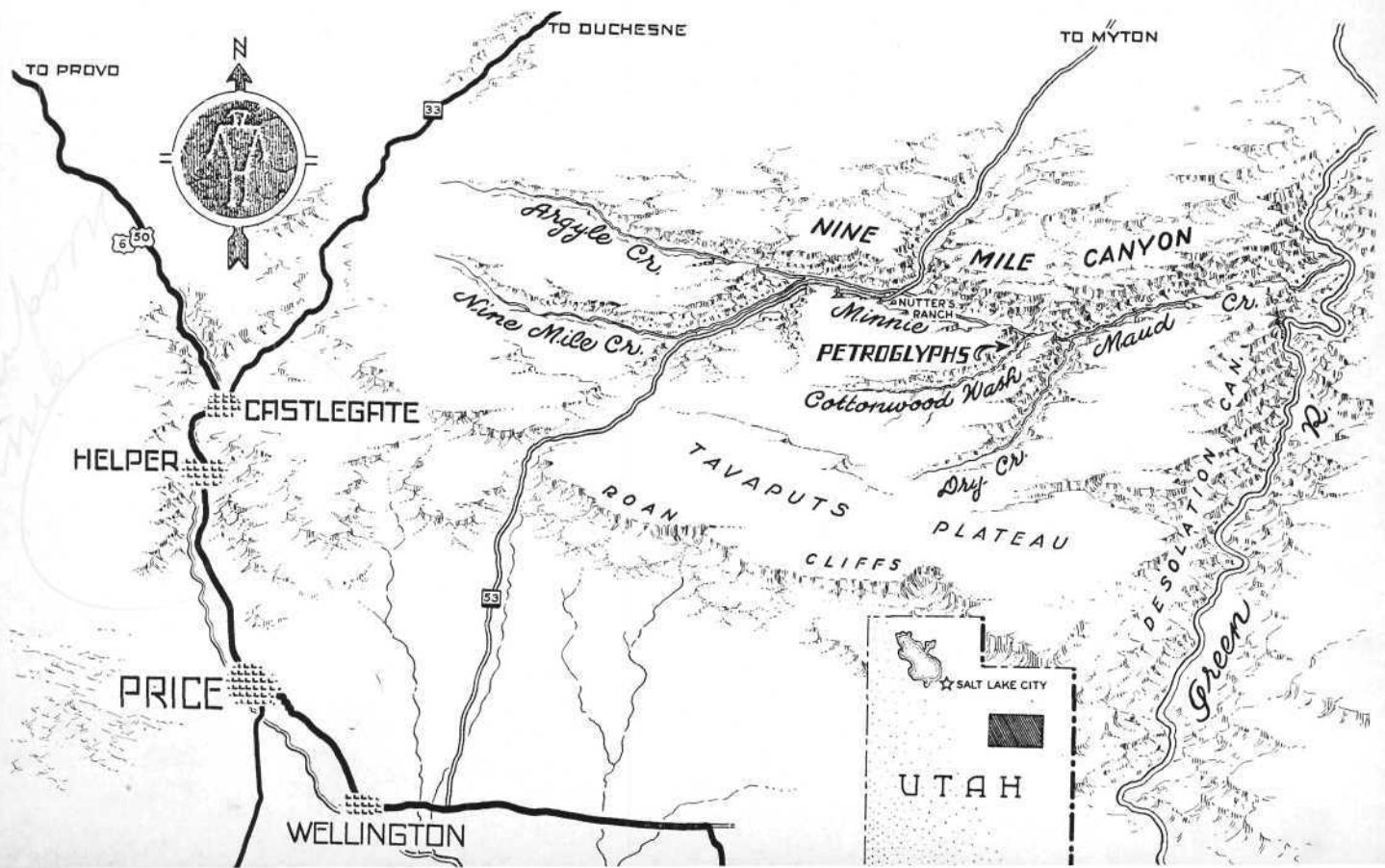
The various groups showed many snakes, one of which was over 20 feet long. There were hundreds of mountain sheep and a scattering of other animals such as deer, elk and bear. We found pictures of several varieties of birds, always rare in petroglyph groups, and a few buffalo, found nowhere else in Utah except near the Uintah basin. There were no buffalo left in the Uintah country when pioneers arrived, but these pictures, and an occasional skeleton, indicate this great beast was hunted in early times. Curious omissions in the list of food animals were antelope, mountain goats, rabbits, sage hens and ducks, although bones of all these have been found in nearby caves.

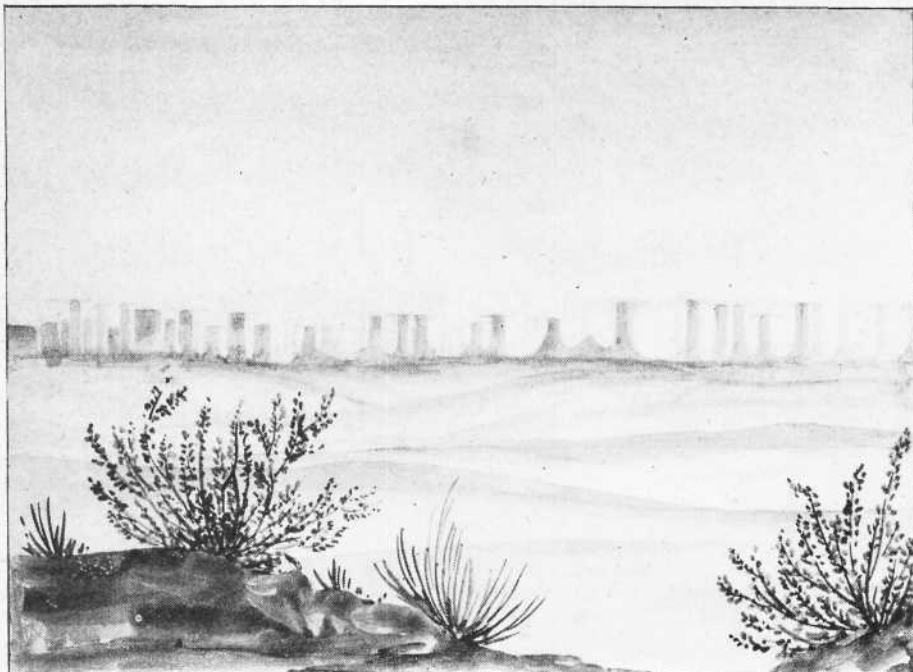
Conspicuous for their number, particularly in Nine Mile canyon, are pictures of mountain sheep, principal food of ancient man in all the western deserts. These animals came to America from Asia over the ancient land bridge across Bering Strait, and there is little doubt that pursuit of this game led primitive man to America. Pictures of mountain sheep almost identical with those in Nine Mile were found in Mongolia by the Roy Chapman Andrews expedition. In America the animals spread through the Rocky mountains from Canada to Mexico, and at one time must have

been extremely numerous. They still were comparatively numerous in pioneer times, but were almost exterminated, not by modern weapons, but by disease contracted from domestic sheep.

Frank Beckwith enjoys trying to guess what was in the minds of the primitive men who made these old etchings on the rocks. As we sat in the cool shade of the cliff he pointed out what seemed to be the obvious intention of the artist. At the top of the picture was a medicine man with buffalo-horn headdress, who furnished hunting charms and cast a spell on the game, indicated by the wavy line near his feet. The hunt probably took place in June because the ewes are shown with small lambs. The three figures with bows and arrows represent the hunter and his sons, who seem to have cornered the flock in a draw or cove similar to the one where the picture was found. Indians ordinarily did not kill ewes with small lambs, so these hunters probably shot only the bucks or old ewes, letting the others go until the lambs were weaned.

Every hunter likes to make a record of his kill. In these modern times nearly every sportsman carries a camera, often deriving more pleasure from showing his pictures than in killing game. In this he is no different from his primitive brother, who made a record of his hunts on smooth canyon walls. Our own photographic records may, with luck, be preserved for a generation or two, but we never can hope for the permanency achieved by this unknown hunter in Nine Mile canyon, whose etching on solid rock has endured for probably not less than a thousand years.





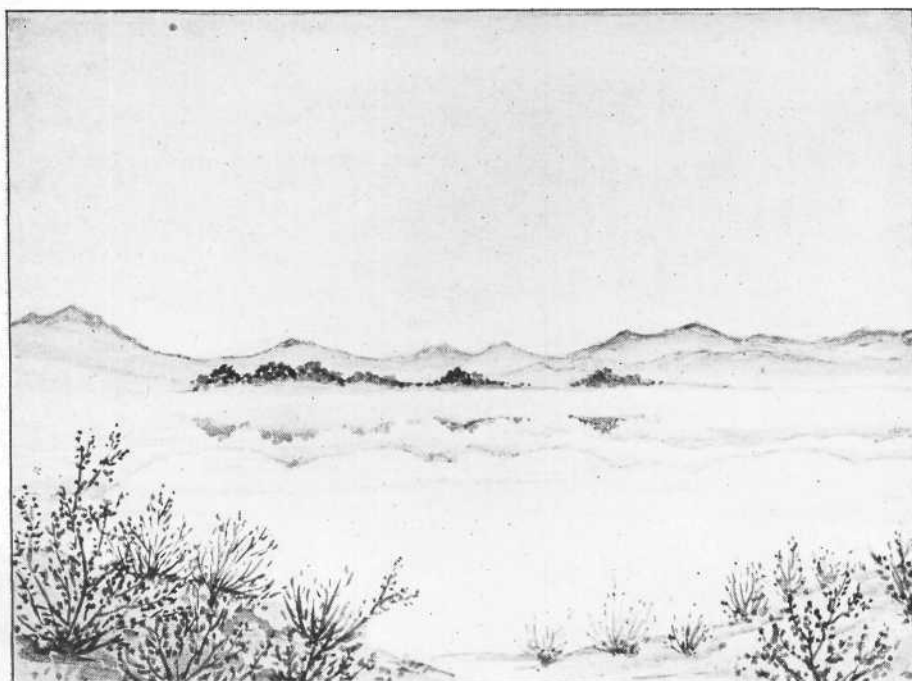
Lateral mirage. Vertical sheets of air of different density, probably rising columns of warm air, sometimes distort distant mountain ranges so that they seem to be fantastic cities with tall buildings. Shapes waver and fade like things enchanted. This mirage is most common on a bright morning following a cold night.

ONE DAY in the middle of June I was returning with friends from a visit to Pisgah crater on the Mojave desert of California.

We had heard that the lava beds at Pisgah become really hot at this time of the year, and were curious to know just how it would feel to spend a couple of days in the desert's most extreme temperatures.

We found out. Badly sunburned from our hike across the lava flow we discovered that the only kind of grease we had to rub on our faces was oil drained from a can of sardines. We smelled like a gang of Eskimos, and in order to delay our homeward trek we decided to make a side trip to Calico. So we turned north at Daggett.

Inferior mirage. Here the inversion layer, air of different density, is below the eye level of observer. Effect is same as reflection from a horizontal mirror. This is the most common type of mirage.



Mirage--

MAGIC OF THE AIR

By JERRY LAUDERMILK
Original drawings by the author

The road to Calico crosses Calico dry lake directly west of Yermo. We were about half way across when, like a trick on the stage, over toward Yermo, there appeared a beautiful lake with the cottonwoods, water tank, depot and houses reflected exactly as they would have looked had the lake been full of water instead of an expanse of hard-baked clay. At times a passing breeze would make the reflection tremble as it would in actual water. It was realistic enough to have deceived anyone not familiar with mirages.

I always had wanted to run down a mirage. This looked like a perfect opportunity. The surface of the lake was like a racetrack. We headed straight into the mirage. We never caught up with it. The thing was always just out of reach. Soon we had crossed the lake. We stopped the car and there was little old Yermo mopping her brow in the heat and looking no different than usual.

Since then I have gone on many mirage hunts—and have found some beauties. One of the best was at Bristol dry lake. I came down from Sheephole mountains and there was the mirage, apparently cool and peaceful expanse of water. On the opposite side stood a herd of what looked like giant giraffes. Sometimes they seemed to squat down, then stretch their necks upward high in the air. I drove on and was soon at the old Bristol salt works. My giraffes were the buildings twisted and changed by the heated air. The unusual thing about this mirage was that there really was water—a canal about three feet wide lined with beautiful salt crystals where two lone mud-hens, evidently stranded on their way to more friendly surroundings, paddled around in circles. The mud-hens and the water had nothing to do with the mirage.

My acquaintance with mirages had begun in Arizona many years ago. I learned that there were several distinct types of mirages. The one we saw at Yermo is the commonest kind and is called an inferior mirage. Here things are reflected base to base as in an ordinary reflection in water. In a superior mirage, the inverted image appears above the object, top on top. The Bristol dry lake appearance was a combination of these two types of mirage. In another type, distant mountains and build-

Everybody is interested in mirages. In the popular mind they are as closely associated with the desert as cactus and heat and rattlesnakes. Weird and fantastic are the tall tales stemming from a desert rat's experiences with these illusive images. But the explanation of this optical phenomenon is not so well known. Jerry Laudermilk, who can "make" a mirage at will in his laboratory in Claremont, California, tells *Desert Magazine* readers how mirages are formed. He warns, "This is going to sound like some of the yarns your grandfather used to tell about the wonders he saw in the sky when he crossed the plains in a prairie schooner. His story was true. This story also is true."

ings assume forms quite different from their own. This kind seems to have no name.

"Towering" is a form of mirage not often seen in the desert. In this case, a distant object is seen in its true position but apparently much larger and closer than it actually is. I was once fooled by a mirage of this kind near Octave, Arizona. The assay office at the mine, although eight or ten miles away, appeared to be almost within calling distance, every detail standing out as clearly as if seen through a telescope.

Combinations of mirages sometimes produce fantastic results. Once I was on the morning train going from Wickenburg to Phoenix. The day was cool but the sun was shining brightly. There were cloud banks apparently close to the ground. As the train was about to pass under one of these formations, the conductor came to my seat and said, "There is going to be a good show in a minute and I want you to see it." I went with him into the smoker, and for about 15 minutes that train plowed through pure fantasy.

This is going to sound like some of the yarns your grandfather used to tell about the wonders he saw in the sky when he crossed the plains in a prairie schooner. His story was true. This story also is true. At an altitude of about 500 feet there appeared line after line of shapes resembling soldiers marching in battalion front. These soon were replaced with what looked like a vast herd of buffalo. By using my imagination, I could see almost anything. The show ended with cloud formations resembling grotesque buildings and things without names drifting through the sky. The conductor was as proud of that mirage as if he had staged the whole thing for my benefit. This was probably a case of superior mirage combined with alto-cumulus clouds.

When I returned to my quarters near



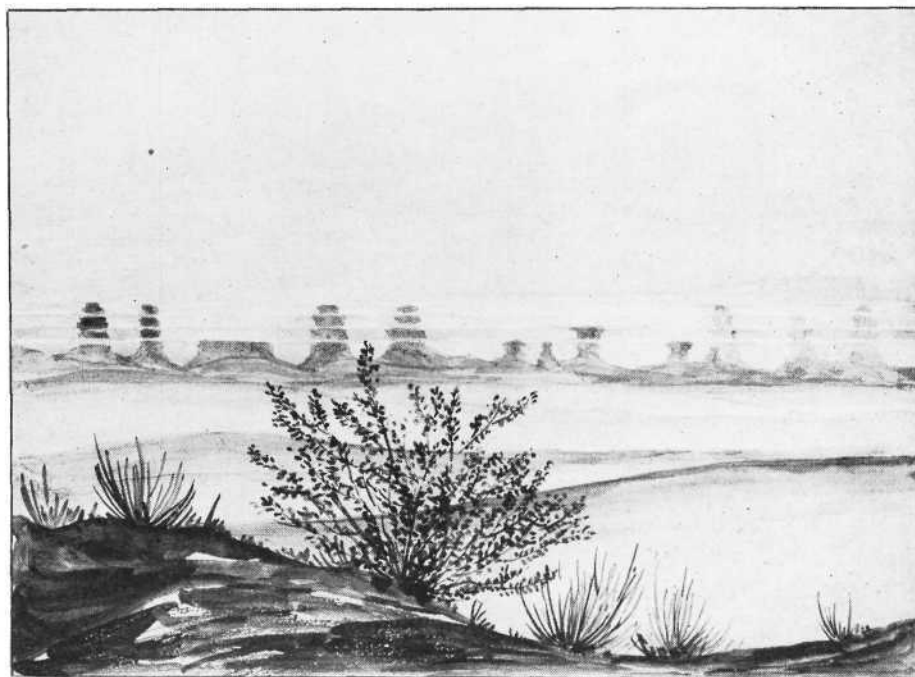
Superior mirage. This time the inversion layer is above eye level. Things are reflected as if from a horizontal mirror overhead. An uncommon type. It may be mistaken for a strange cloud effect.

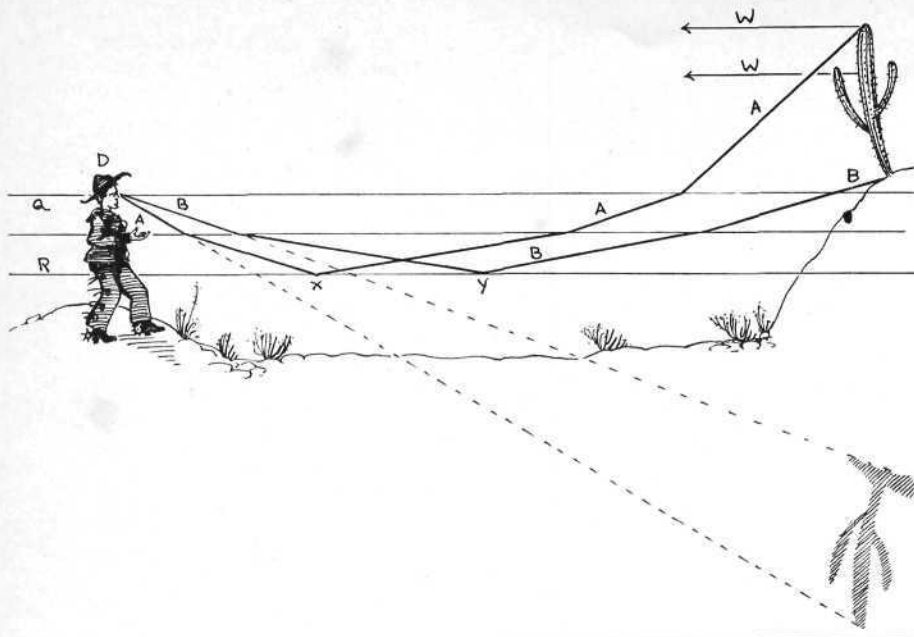
Wickenburg, I still had mirages on my mind. I rigged up an apparatus for producing the effect artificially. This consisted of a board platform covered with black building paper set up on saw-horses. At the forward end I modelled a miniature range of mountains in plaster of paris about two inches high and colored them brown with water from a rusty tin can. Since it was out of doors in bright sunlight, it did not take long for my appara-

tus to heat up. It worked perfectly. When I looked from above the hot layer, the mountains seemed to be reflected and inverted just as they are in an inferior mirage. By sighting up and down across the hot layer for a few fractions of an inch, I could see every stage of an inferior mirage from just the faintest suggestion to the perfect illusion.

The "why" of mirages is rather simple. Sir David Brewster and others worked out

Multiple-superior mirage. Several inversion layers above observer's eye level may produce weird effects. Distant objects are changed by the heated air into totally fantastic things.





Above—Section through an inferior mirage. At D, the Dude stands with his eyes at about the level where warm to hot layers, Q, R, shade off into cool layer. Rays from cactus are reflected in all directions from illuminated side. Some of these marked W travel straight toward the Dude and show cactus in its true position. Other rays, A and B, shoot obliquely downward into warm or refracting layers and bend downward and forward until at X and Y they undergo total reflection, bend upward on a concave path and finally carry an inverted or apparently mirror image to eye of Dude. Consequently he sees two images of cactus—the normal, by way of W rays, and those by the bent rays A, B. Drawing is exaggerated, as distance from Dude to cactus actually would have to be one half to several miles.

Below—Superior mirage. Here, the Dude stands in layer of cool air at about the level where this blends off into a warm to hot layer Q, R above his head. This layer may be several feet thick. Another cool layer lies on top. Rays from the butte in distance do the same thing that happened in case of the inferior mirage, but here total reflection layer is at the top and conditions are reversed. The Dude sees a shadowy image of the butte in the sky at W. These two figures redrawn and adapted by the author from "Elementary Meteorology," by John Brocklesby.

the basic scheme a long time ago. It is easy to have a good working knowledge of mirages if you keep in mind these two essential facts: first, that light travels through air of normal density at the rate of 186,337 miles per second. And second, that when a ray passes from a layer of normal density into one less dense, it is slightly speeded up and bent forward. This

bending of light rays by difference in density of media is called refraction. If you keep this refraction business straight, you have the key to the mirage.

The inferior mirage is the simplest kind, so we'll explain that first. Hot air is less dense than cold air and when light rays reflected from some distant object strike a warm layer obliquely, they begin to bend

forward and downward as they penetrate the hotter layers until at a certain point they begin to turn up again like a wooden coat hanger held horizontally with the rounded side toward the floor. In fact, a coat hanger with a straight bar to hold your trousers makes a good piece of apparatus to demonstrate just what I am explaining.

On cool bright days, the surface of the desert heats up and a layer of heated air extends upward for several feet. This is the thin or speeding-up layer. In the diagram, I show these layers like a cross-section through a layer cake. It is not exactly like that, because as the hot air rises it becomes mixed, so that beginning with a hot layer at the bottom it finally shades off into a layer of normal coolness and density at the top without any well defined cleavages. There actually is no well-defined stratification between the layers. I merely show it this way for convenience.

Light rays from a distant object shoot out in all the directions from which the object can be seen. Some go straight ahead like the straight bar on the clothes hanger, but others go slantwise like the curved side. In the case of an inferior mirage, what we see is the result of viewing the object by way of two sets of rays. The horizontal rays show the object in its true position. The oblique rays begin to bend the instant they strike the heated layers. They travel forward on a downward curving slant until finally they reach a point where they undergo total reflection and begin to be refracted out of the hot layer in another curve equal to their first bending. Finally, the image produced by the oblique rays will reach the eyes of an observer by way of the last of these rays to enter the eye and appear upside down as if reflected in a mirror placed flat before the object. This is all shown in the diagram.

Now for the superior mirage. It is called superior because the layer where oblique rays bend—the "inversion layer"—is rather high above the horizontal gaze of the observer. It is the coat hanger with the straight side toward the floor. The effect is just as shown in the diagram. If you have remembered the conditions in the case of the inferior mirage, this type is just as simple.

Understanding these diagrams is far less difficult than it is to see how your wife can take some fantastically-shaped pieces of tissue paper and cut out a dress from apparently less cloth than she has paper.

Studied from the purely mathematical side, mirages can be pretty tough. The explanations I have given are just the bare facts but provide a good working basis.

Mirages are not confined to the desert. In fact, the superior mirage is seen most frequently at sea. Some cases are recounted in an interesting book called "Elementary Meteorology" by John Brocklesby.

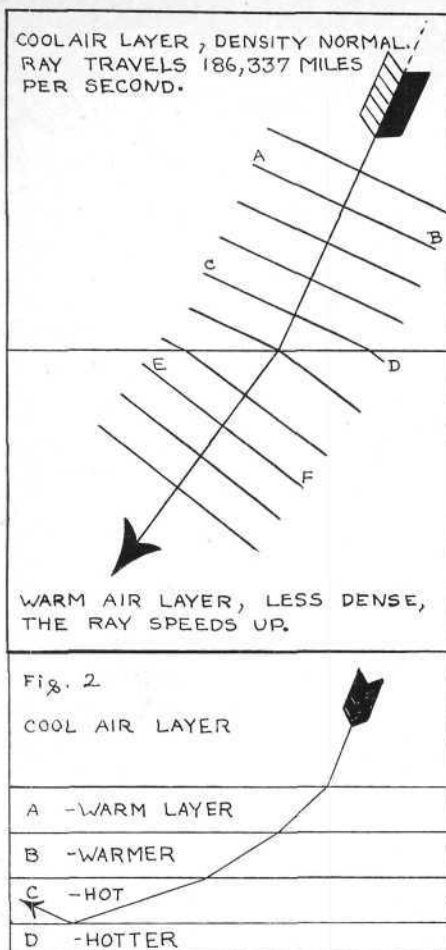


Fig. 1—Imagine a light ray from any illuminated object as being a sort of disturbance traveling forward as a cylinder that moves through the air of normal density at the rate of 186,337 miles per second. In warm, or less dense, air the ray travels slightly faster. Suppose A-B, C-D and E-F to be cross-sections of the ray. When the ray passes obliquely into the warm or speeding up layer the edge D, which strikes the layer first, is bent forward as shown. As the ray passes deeper into the warm layer it becomes entirely bent as at E-F, so the whole ray finally is bent forward in the direction of arrow. This bending of a ray is called refraction and the cause of 99 percent of a mirage.

Fig. 2—At A, B, C, D a ray is shown passing into layers of air of decreasing density, traveling faster as it enters each layer. Finally, ray reaches a layer at such a small angle it no longer penetrates, just skims the surface and begins to turn up and be totally reflected at D. Actually, the layers are not as sharply separated as shown.

Although this book was published in 1849, it is a fine work for the general reader who wants a painless initiation into

the mysteries of the atmosphere. Brocklesby cites some remarkable cases of mirages.

For instance, at Ramsgate, England, on August 1, 1798, an observer, Dr. Vince, saw a ship low on the horizon, just the topmasts being visible. In the sky above the ship, which was practically invisible, were two perfect images of the entire vessel. One was upright, the other inverted, and the hulls were apparently touching. Even after the topmasts had passed out of sight the images were still distinct. This is a classic example.

At Ramsgate again, on August 6, 1806, Dr. Vince saw a remarkable mirage of Dover Castle. Ordinarily, only the turrets were visible from the Ramsgate side because a hill obstructed the view. On this day, the entire castle was to be seen from Ramsgate. Both these mirages were probably due to the effect of "towering" combined with the superior mirage.

Mirages, aside from the annoyance they cause prospectors and surveyors, sometimes have been of extreme importance. Humphries, in his book, "Physics of the Air" says that during a battle between the English and the Turks in 1917, the fight had to be called off because of a mirage which caused far distant objects to appear displaced from their true positions. So mirages have to be taken into account by artillerymen, surveyors, astronomers and others who have to make long telescopic sights.

Like all natural phenomena, mirages are capable of both a simple and a technical explanation. To go into the subject simply, as I have done leaves much unsaid but it dodges a lot of trigonometry and does give a groundwork for the study and appreciation of mirages.

Sez Hard Rock Shorty of Death Valley . . .

By LON GARRISON



"Well," began Hard Rock Shorty, "I've been called all kinds o' things since I was big enough to begin sassin' my maw, but this is the first time anybody's got me mixed up with one o' the Real Higher-ups. It's all here in this article on geology I been readin' about Fire crater over here. Now, when I first seen Fire crater, it wasn't no crater. It was called Fire mountain, an' if a volcano made it like it says here in this article, I'd better watch out I don't get another one o' them volcanoes started onct an' leave it turned on too long."

Hard Rock leaned back in his chair disgustedly. He adjusted his feet on the porch railing and calculated the length of time the shade would last before going on with his discourse on the time he was a volcano.

"Yes sir—I was comin' into Inferno one spring day after bein' out most o' the winter an' I camped right beside old Fire mountain. In the mornin' when I was chasin' burros I was all over the mountain an' down on the north side I found a little cave. I walked back in a ways an' it was just like visitin' the North Pole. It was as cool as a ice cream soddy an' after I got my eyes used to it I seen that the cave was almost full o' ice. No tellin' how many

years it'd been there an' it was still just as cold as the day the ice machine unloaded it.

"I seen right away that I c'd make some money out o' that—it was only a few miles on in to town an' I c'd get a wagon right up to it. So, after markin' the cave entrance real careful, I started on after the burros. But then I begun to worry about somebody else findin' it too so I went back to camp an' brought up some powder an' put a couple o' shots in the entrance an' blew the door full.

"Next day I started back from town with a team an' wagon but when I got there Fire mountain was gone an' there wasn't nothin' there but this hole in the ground they call Fire crater now. I didn't get no ice, but I was so blamed pervoked that I stayed there 'til I got it figgered out an' it took me close to a week.

"Seemed like there was a little carbon dioxide gas seepin' in the cave, an' when I plugged up the hole the gas couldn't get out. The pressure kep' on buildin' up 'til it finally blew the cork—only in this case it blew the lid off.

"Only part makes me feel good now is what it says in the paper about the evidence o' the Mighty Hand that tore the hole in the ground. Yup—by golly, that's me!"

MIRAGE

By R. WENDELL HASTINGS
El Centro, California

Dancing on the grey sands,
Dancing on the white.
Painting pretty pictures
With my colors bright.
Now it is a mountain,
Now a lake of blue,
Now a flashing waterfall
Beckoning to you.

When your heart is weary,
And your feet are lead,
And the brazen sun god
Beats upon your head
There before your tired eyes
Quick I spread a pool
Thick beset with palm trees,
Filled with water cool.

Now your pulses quicken,
Now you forge ahead.
Here at last is water,
Here you'll make your bed.
But Mirage is laughing,
Laughing at you, Fool,
For you'll die in hot sands
Where I made a pool.

THE RATTLESNAKE

By IRENE BRUCE
Reno, Nevada

Beware, but understand the lowly snake:
He concentrates his craving on a fowl
He has to swallow whole or not at all.
His fangs, with which he strikes, can overtake
The startled beat of helpless hearts of prey.
He has no legs, and everywhere he goes
He crawls, uncoiled, his stomach stalks his foes,
Or outruns death for yet another day.
His rattle freezes unseen terror where
The tangled grasses subtly change their hue;
His fear is far beyond the fear in you;
He bites because your foot has pressed him
there!

BUCKTHORN BLOOM

By EMMA J. C. DAVIS
San Bernardino, California

Oh, is it a wisp of campfire smoke
Adrift on the hillside brown?
Or is it a mist by the dawn-light kissed?
Or a bit of the sky dropped down?
Oh poppy-gold and the purples bold
Of the lupin are fine and rare
But the buckthorn bloom that veils my hills
Is fairest of all things fair.

COOL WATER

By LELA M. WILLHITE
Salinas, California

Water, magic, wonder word,
Sweetest sound of desert heard—
A patterned stream, shallow, wide,
That cascades from a mountain side
To spill across the desert sand,
And vanish in the thirsty land.

DESERT INSTINCT

By MRS. J. C. DAVIS
San Bernardino, California

Little quicksilver quail, from what foe have you
fled

That you hide yourself under a leaf?
What can you have learned of that speck over-
head

In your life, so secluded and brief?

Whence came the swift warning that shelter to
seek?

How can you have known or have guessed
Of the fury of him of the talon and beak,
Small fledgling, just out of the nest?

A DESERT EPIC

By GEO. M. GOODELL
Los Angeles, California

At first it was an aimless wanderlust
That leads to views of desert-scapes afar;
Ere long he heard of ores and lucky strikes
And felt that he had found his guiding star.
*God surely sends ambition's trends;
Why doubt his purposed ends.*

He found out how to make some simple tests,
He learned the diamond hitch and other tricks
A stake of grub to last three months or more;
And with a map he started for the "sticks."
*In pleasures lurk the hardest work,
With joy lost when we shirk.*

It turned out that the map was rather vague
Landmarks galore it didn't show at all.
But still his lodestar led him on and on,
Though veins he found were far between and
small.

*Ambition's haze may cloud our gaze
And lead in unplanned ways.*

About three miles up a sandy wash
There was a spring, according to the map.
Which wash? Among so many to explore?
The answer would have saved a sad mishap.
*Half hid in sand, a bony hand
Still points the trail he planned.*

THOUGHTS OF FORGOTTEN SAND

By MAURICE W. BUCKINGHAM
North Hollywood, California

I once was a desert
Where crimson and purple and gold
And cacti and sagebrush
Remained with my splendor untold;
But man with alfalfa
Enriched my alluvian soil,
Then orchards and meadows
Replaced the grace of my toil.

The fingers of cities
Soon laced through the grass and the trees
When houses erected
Were patterned to harness a breeze,
While smoke from exhaust pipes
Repulsed all my fragrance of yore,
So, I as a desert
Can only remember my lore.

TRYST

By LUELLA BENDER CARR
Proctor, Minnesota

I saw a mountain peak today
all pink and amethyst
And felt a wonder as I saw it
knew I'd kept a tryst
With a rose and lilac mountain range
whose crags were veiled in mist.

I saw them last (these towering peaks)
some thirty years ago.
And countless times in all the years
I've longed to see them, know
If they still stood there just the same
in a sharp serrated row.

And treasured in my memory
down through all the years
Was this lovely vivid picture
of sun-tipped rocky spears
And mountain slopes, soft pink and mauve
behind Life's storms and tears.

CREED OF THE DESERT

By JUNE LE MERT PAXTON
Yucca Valley, California

Past miles of sand and long ravine
Appear palm trees in a patch of green.
Ne'er was a spot in all God's places
So welcome as a desert oasis.

YEARNING

By BESS FLYNN
Coronado, California

I stand alone beside the sea
And gaze with longing eyes
To far off hills where once I roamed
'Neath friendly star lit skies.

Where the coyote's mournful wail at dusk
Re-echoed from each rock
And a glorious blood red stallion
Stood guard o'er his precious flock.

His proud head high—his tossing mane
His whistle bold and shrill
Bespoke a dauntless spirit,
A free, unconquered will.

Free to roam where fancy called
No human laws to bind
No fear for the dawning day ahead
No regret for the day behind.

Oh, would that I might stand, as he
On yonder mountain dear—
Forget the past—its joy—its pain
Nor dread the future dear.

Why must I shrink from that to come
Why grieve for that which is flown
Would that I like the gallant beast
Might live for each day alone.

CAMPFIRES

By L. SANDRA DEETH
Pasadena, California

On mountains high that touch the sky
My campfires burned at night
And valleys low have known the glow
Of their red dancing light.
They've flickered o'er a score or more
Of faces loved and true
That now are gone forever on
From all the trails we knew.
But I'll always see in memory
Across a campfire's blaze
The eyes of you 'mong that wild crew
My pal of other days.
Though trails lead far like a shining star
Beside whose flame I'll rest
I'll see a while your strange sad smile
Across a fire on the desert's breast.

IRONWOOD

By SYBIL M. FIELDER
Hemet, California

An ancient ironwood tree
Looms black against the sky
There by the tip of the moon.
'Tis a gnarled old witch's bones
Blown from the midnight sky
And heaped at the edge of the dune.

KANGAROO RAT

By CARROLL DE WILTON SCOTT
San Diego, California

The kangaroo rat is an acrobat
Who is trim and lithe when standing.
He leaps in the air as a clown at the fair
On his hind legs nimbly landing.

By day he's asleep in his tunnels deep
But he can dart up like a rocket.
At night he hops out to gather seed crops
He carries in each cheek pocket.

His silvery tail is a comet's trail—
Or is it a flying rudder—
As it steers him home, a frightened gnome,
When a bobcat makes him shudder.

He closes his door with an earthen core
To keep out snake and weasel,
And all his needs are answered by seeds
As dry as the autumn teal.

Before Carl Hoerman decided to paint he was an architect. So with the logic that accompanies such a profession he chose Grand Canyon as his first and favorite subject. That it was about the most difficult thing an artist could attempt didn't occur to him. He just picked out the subject with the greatest architectural lines in the West! His friend John Hilton gives a close-up of the man who "tackled the toughest desert painting job first."

Grand Canyon Artist

By JOHN W. HILTON

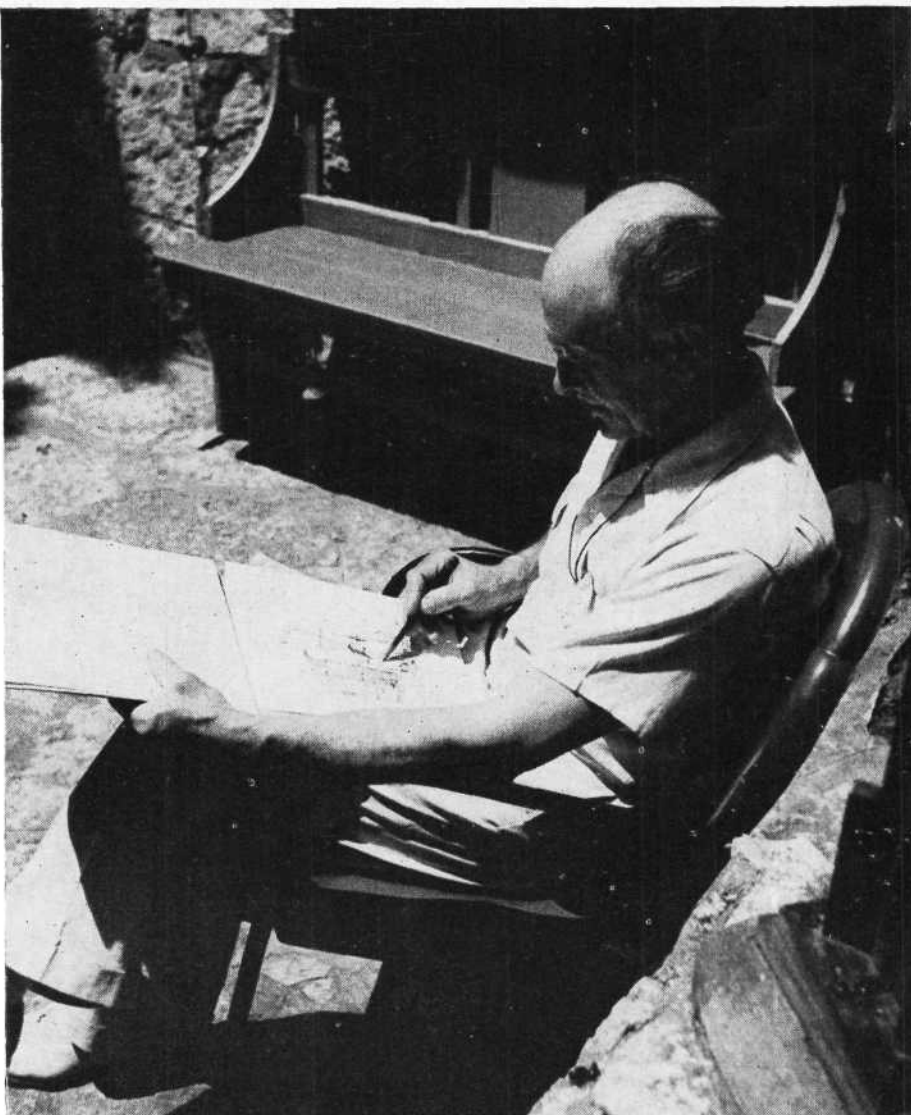
WE WERE at the Riverside Mission Inn one sunny afternoon several years ago and I was going through the Adobe gallery looking at the Carl Hoerman one man show with the artist.

His desert paintings were so real yet so idealized that the question came to my mind as to how he got his start in painting the desert. His reply was typical of the man.

"Oh, that's easy," he said. "I was an architect before I decided to paint so when I came to the desert I looked for something of an architectural nature and settled on the Grand Canyon as an ideal subject."

It didn't seem odd to Carl that he should have tackled first off the subject which every desert artist declares to be the most difficult. To him no one subject seems more difficult than another. He finds that the same rules apply and that no matter what the subject may be, there is no substitute for hard work and careful drawing.

I have watched Carl Hoerman work and the "rough sketches" which he turns out in the field are as fine as most finished etchings. He sees the important lines



The artist at his Saugatuck, Michigan, studio. Photo by Lewis C. Fay.

and has a knack of getting them on paper and canvas along with a touch of his own which adds glamour without destroying realism.

It is easy to see from a show of Carl's paintings that he feels there is enough squalor and dirt in the world without covering up wall space in galleries and homes with paintings of this nature. Whether the subject is a street in Old Mexico, a desert sand dune or a thunder storm over Grand Canyon his work is clean.

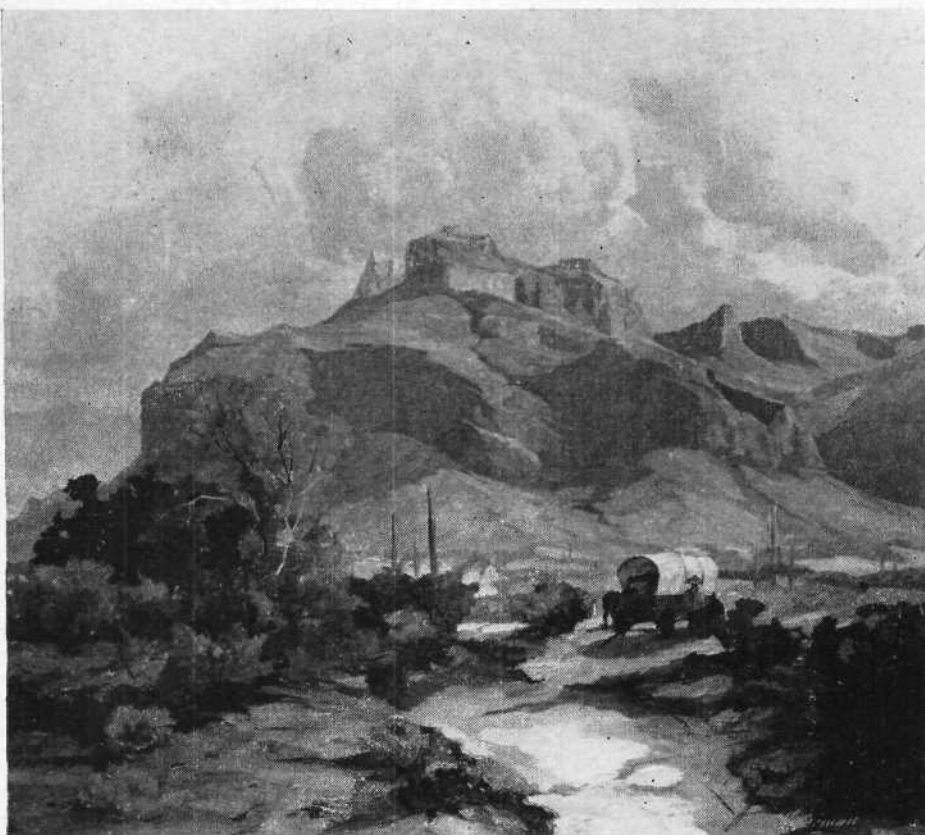
Whether he is in his winter home in Riverside or his summer home in Saugatuck, Michigan, Carl surrounds himself with friends who like the finer things in life—music, good books, art, travel and handcrafts. At both homes he has his parlor "wired for sound" and entertains his friends with the world's best recordings. Nothing pleases him more than to play host to an interesting group who sit on pillows around the floor and listen with the lights dimmed to some fine symphony recording, or one of his many musician friends make the works of the masters live

again with instrument or voice.

His wife Christina, besides being a fine artist in her own right, is a musician, and with her at the piano there are usually a few vocal get-togethers during the evening with everyone joining.

When I asked Mr. Hoerman about his former life he replied that no one wanted to know about his childhood, his architectural practice in Chicago or why he quit milking cows during his farming period and took up painting in 1924. "Why," he asks, "should we rehash my sad and wicked life," and stops at that.

I did manage to piece together a few facts. He is 57 years old, looks and feels about 40, still likes to do carpentry or wood carving and considers painting just as hard work as any other profession in which he has engaged. He would rather listen to good music than eat and he loves to eat. He likes to paint Spanish colonial architecture, and Grand Canyon and sand dunes most of all. He finds many of the latter both here in our desert and near his Michigan home and does them to a per-



Superstition mountains, near Phoenix, Arizona, by Hoerman.

fection that is the envy of many a young artist.

He is a member of the Chicago Galleries

association, the Chicago Painters and Sculptors, and the Riverside and Laguna Art association here in California. He has

Hoerman's painting of Rock of Ages, Grand Canyon, Arizona.



painted all over the world and his paintings hang in many countries today. The war has stopped his migrations for the time being but he will be back out here as soon as the war is won.

Yes, we have missed the Hoermans here in the desert and in Riverside this season as we miss many others but our loss is probably Saugatuck's gain. I like to think that those fine desert canvases and cultured hospitality are doing their bit back there to make folks feel better who cannot come out to the desert for the duration. It is hard to calculate the good such works as theirs can do in times of strain like these. Young soldiers visiting their home or one of Carl's art shows must feel even more the fact that this America of ours is worth fighting to preserve.

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DESERT MAGAZINE
El Centro, California

P.S.—To help holiday mail congestion and prevent disappointments you will be planning your Christmas gift list earlier this year than ever before, so plan now to include *Desert* in that list. We'll be able to handle advance orders with special care.

PRIZE STORY

This is the sixth in a series of prize winning stories of personal experience selected during a contest conducted by Desert Magazine last summer. The three remaining prize stories are scheduled for succeeding issues of Desert Magazine.

I Learned About Desert Thirst

By JERRY LAUDERMILK

WICKENBURG had scorched since sunup. It was July 28 and at 11:30 a. m. the town was practically *done*. In Hal Dodge's pool hall the thermometer showed 128 degrees in the coolest place. A couple of drummers settled a bet by cooking a skillet of hash on the sidewalk in front of Bob Coolidge's lunchroom. At sunrise the heat had been so terrific that it hit you in the face with a smothery kind of *push* when you opened your door. It was *hot*, hot even for Wickenburg where the oldtimers braced their courage by declaring "You don't feel this dry heat." In fact, Old Sam was of the opinion that heat was good for the lungs—"it petrified 'em."

Sam used to "hole-up" as he put it, in the old Vulture mine assay office about a mile north of town. I used to drop in to chew the rag. Sometimes in the afternoons we'd sit on the porch and watch the mirage. While Vulture peak, 18 miles away, wiggled around in the heat, Sam would load me up with desert stuff—how to shed water from a bisnaga cactus, not to shed my shirt if I ever got caught, and if I ever got "thirsted out" to put a spoonful of salt in every quart of my drinking water—a hundred items of good practical information you don't find in books. Sam was a regular desert encyclopedia.

One of the fixed ideas Sam had, along with a belief that U. S. government camels still live out around Date creek, was that nobody could *take* the desert for ten miles at 120 degrees. You'd evaporate so fast that the water you had to carry to make up the loss would keep you on the losing side. The bigger you were the worse off you'd be; *nobody* could do it. We had several arguments on the subject, had a standing bet in fact.

I was practically a tenderfoot. Just discharged from the army in April and supposed to die of T.B. But as usual, I disappointed everybody. Three months of Arizona had me back on my feet and in good shape. When I left Ashfork for Wickenburg, some dude gave me a pitying look but included a copy of Harry Franck's "Vagabonding Down the Andes." This book was an inspiration. Vagabonding became something to look forward to. I de-

cided that when (there was no "and if") I pulled out of the T.B. I'd do the same kind of thing on a small scale, hike overland from Wickenburg to Flagstaff. I did. I count this hike as beginning from the north end of Bob Coolidge's lunchroom.

My outfit was a blanket-roll, a quart U. S. army canteen, some cooking gadgets and rations and a rifle. The LK Bar ranch was my first stop, and while my cousin and I finished a big watermelon he tried to talk me out of tackling the desert on a hot day. Like Sam, he didn't think it could be done and wanted me to sleep at the ranch and start fresh in the morning. But I had my mind made up. After we smoked a couple of cigarettes I shoved off. In two hours I began to learn what you mean when you say "tough going."

At the Oro Grande pump-house in Box canyon, I filled my canteen and began to follow my compass to Octave, almost 20 miles by trail. Maps show it a lot less, around 16. Now remember, this day was *extra* hot.

In July and August the tunas (fruit) on the saguaro (giant cactus) get ripe. The outsides open up so they look like red four-pointed stars. The tuna itself is sort of dry and tastes much like a fresh fig but better. I was in the thick of the cactus forest and fooled away the best part of my time eating tunas. It was well on in the afternoon and I had just begun to hike.

I'd climb one hogback and rattle down the other side, then do it over again on the next. The heat reflected from the rocks made me feel like a cockroach on a hot waffle-iron.

Saguaro tunas make you thirsty. I began to hit my canteen a little too hard. I had about half a pint left when my bad luck started. I took good care of what water I had left and finally topped a ridge. I could see the windows in the assay office at Octave—it looked close. I finished my water. This was a bad mistake.

The going was not too tough until I struck the arroyo. This arroyo is little, not big enough to get on the map. It slants off to the northeast toward the old Uncle Sam mine. I had been warned to be on the lookout for it because in some places it is 35 feet deep with only one good place

to cross. I missed this place and what was worse wasted a lot of time looking for it.

Now while it is true that extra strong people have lived for as much as four days without water, it was an experiment and done under cool surroundings. Generally, you do the second half crawling. Thirst takes hold fast. When it hits you hard it goes like this: first, you are *powerful* thirsty, thirstier than you ever have been in your life. You can't keep your mind off the subject. You stop sweating, your skin dries out until it begins to feel as if it belonged to somebody else. About this time you pick up a couple of pebbles and stick them in your mouth. You have read somewhere that this "promotes the flow of saliva." They rattle around like a pair of dice. *There is no saliva to flow*. Right away your lips dry out and crack open. Then your tongue—this swells until it gets too big to stay in your mouth. Things follow fast, you try to vomit but there is nothing to throw up and your esophagus is *dry all the way down*. You get hot all over and want to shed your clothes—some people have tried this before. They are all dead.

I went through all these degrees of initiation and was on the lookout for anything with juice in it. With a bisnaga (barrel cactus) I would have been O.K. I could have battered it to pieces with a rock and chewed the pulp. There were no bisnagas. I tried some slices I cut from a prickly pear cactus but the juice was just a sticky kind of glue that only made things worse.

By this time my whole mind was centered on *anything wet*. I saw all the glasses of beer I never finished pass like a parade. I heard leaky faucets wasting water, rain, brooks and the feathery sound snow makes when it hits a window-pane. I felt like a loaf of bread in a hot oven. Then I found my way to the bottom of the arroyo.

It was cooler. There was some shade. I sat down against a rock and something in my pack gave a clunk and a gurgle. I could have kicked myself, because this came from a quart can of tomatoes Bob Coolidge had insisted that I take along when I left Wickenburg.

While I chopped out the top of the

can a near-sighted lizard blinked at me from a chunk of malpais. I poured down the juice, then I ate the tomatoes—the wettest thing that comes out of a can. In about half an hour I felt pretty fair. The rest of the hike was a cinch.

I came limping into Octave quite a bit after sunset. The hydrant in front of the store porch was leaking pure diamonds. I got a glimpse of Mr. Hart, the store keeper, and Old Sam sitting there in telegraph chairs. I stuck my head under the faucet but didn't let on that there was anything unusual, I wanted to make a good

impression. I waved to these two guys. Sam couldn't stand it any longer. He came right out, "We've been watching you through the telescope for the last half hour, how much water did it take you to get through a hell like that on a day like this?"

I let the water run down inside my shirt and slapped my canteen. Since they hadn't brought up the subject of tomatoes I kept my mouth shut.

The two old timers looked at each other for about half a minute, then the tension broke. Sam let a lot of air out of his lungs

and said, "Well, if I hadn't seen this myself, I never would have believed it. You scrapped the desert on her own ground and you're plumb victor'us."

• • •

SAGUARO HARVEST RUINED BY RAIN

Papago Indians in southern Arizona did not hold a prayer dance for rain, but nevertheless rain fell. There was enough rainfall the first of July to ruin the annual harvest of the saguaro cactus fruit, say family groups returned from the traditional harvest grounds on the reservation, west of Tucson.

The giant cactus, saguaro, is an important food source. Papagos cook the fruit into jams and syrups, dry the fruits and seeds for storage.

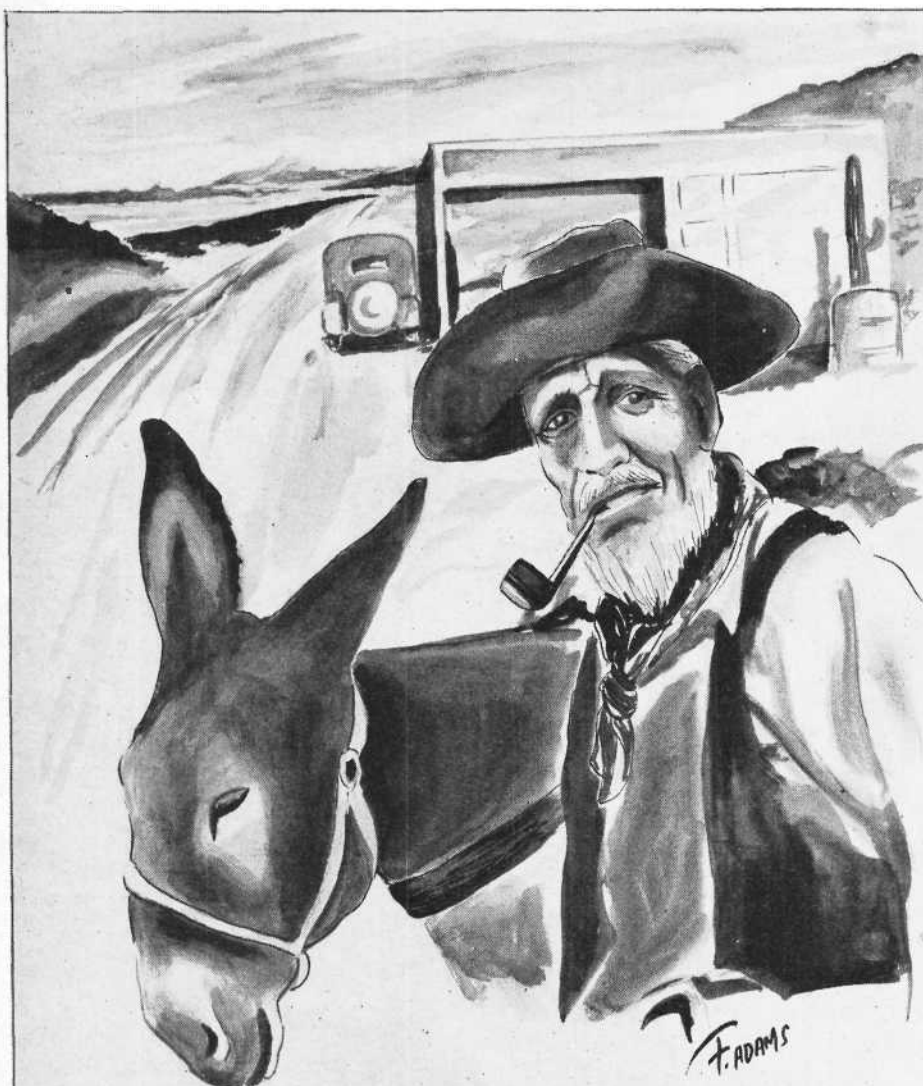
Only a few of the older members of the tribe journeyed to the harvest grounds this summer, many younger Papagos having gone into the armed forces or wartime jobs.

Desert Philosopher . . .

SOLILOQUIES OF A PROSPECTOR

Drawing by Frank Adams

Text by Dick Adams



"AN APPEAL TO HIM WHO CHARTS OUR COURSE
I MAKE WITH INCREASED ZEAL —
WEIGHT ME NOT WITH PETTY TRIALS
THAT DOG A TRADESMAN'S HEEL!"

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Only a few volumes of DESERT are now available. Most of these are newsstand returns . . . but they are complete with the exception of the November, 1937, issue which we no longer can supply.

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And we're still paying \$3.00 for the November, 1937, issue . . .

THE **Desert** MAGAZINE

636 State St.

El Centro, California

HERE AND THERE... on the Desert

ARIZONA

Housing Project Approved . . .

PHOENIX—A \$1,000,000, 200-home project for housing Goodyear Aircraft corporation workers is being built near Litchfield Park, financed by Valley National bank. Entire project, including landscaping, will be completed within six months, announced P. W. Womack, contractor.

Bishop Appointed to Puerto Rico . . .

BISBEE—Ceremony of consecration of bishop-elect, Reverend James P. Davis, was conducted in Cathedral of San Agustín, Tucson, in July. Formerly pastor of St. Patrick's Catholic church here, he was appointed bishop of the diocese of San Juan in Puerto Rico by the Vatican, and expects to leave in September.

Well Known Doctor Passes . . .

PHOENIX—Dr. Orville Harry Brown, one of Arizona's medical leaders and nationally known authority on asthma, died July 25 in Arcadia, California. He had been compelled to retire three years ago because of cancer. He was 68 years old.

Sabotage Fear Baseless . . .

PHOENIX—Rumors of possible sabotage on Parker dam were dispelled by Harold Ickes, secretary of interior, who said they were "another Dies committee scarehead with nothing behind it." Investigation showed there was no danger of dam being blown up by Japanese from near-by relocation center, as was feared.

Mohave Roundup Scheduled . . .

KINGMAN—Annual Labor day celebration September 4, 5, and 6 for Mohave county will consist solely of rodeo this year. Dick Stephens and Ray Jinks are in charge of arrangements and state that it will be as large if not larger than in pre-war years.

Epidemic Checked . . .

SELLS—Speedy cooperation of United States Indian Affairs agency and Mexican authorities curbed threatening typhoid fever epidemic at Pozo Verde, Sonora, Mexico, agency officials announced. About 300 Indians were inoculated to prevent spread of illness.

Smith Snakehunters, Inc. . . .

FLAGSTAFF — Hunters Henry A. Smith and Robert Smith have found no slack season on their game—rattlesnakes. Record of over 70 snakes in five years has placed them in category of official rattlesnake hunters for this section of Arizona. Only drawback is lack of company. Other sportsmen don't seem to be interested in tracking down rattlers.

He Who Laughs Last . . .

FLAGSTAFF — An irritated Mrs. A. W. Yoder of Pinetop sent for rat poison for trade rats that were eating small sprouts in the victory garden. It arrived in gaily colored wrappers which she placed in the garden. She discovered that three were gone next day. Optimistically, the destroyed rows were replanted. Next morning in the garden an again irritated Mrs. Yoder found that the seeds were gone and in their place lay the bright packages of poison!

Boulder Dam Breaks Records . . .

KINGMAN — Boulder dam power plant generated over a million kilowatts, at record breaking capacity, Secretary of Interior Harold L. Ickes has announced. Plans to increase output still further are being made, since the power provided saves vital fuel for many plants and factories using hydro electric power.

The Final Chapter . . .

- The people of Imperial Valley will soon write the final chapter in a thrilling story of progress that has been twenty-five years in the making.
- For a quarter of a century they have fought to secure the future of this fertile valley—to insure the vital water supply—to guarantee the economic future by full development of the great natural resource of power on the All American canal.
- Water they now have in abundance thanks to the All American canal and Boulder dam—danger of flood or drouth is past—soon the story will be completed as full development of the power resource is assured and payment of the canal debt by power sales become possible.
- By purchase of the competing power system—by elimination of this costly competition—by securing a market for double their present sales—the program will be completed and the final chapter written in this saga of progress.

Imperial Irrigation District



Use Your Own Power—Make it Pay for the All American Canal

Feeder Cattle . . .

BLYTHER—Palo Verde valley lands are now pasturing 7,200 head of cattle for Los Angeles markets, Santa Fe officials have announced. To date more than 200 cars have been shipped into the valley from Texas, New Mexico and Arizona. This total compares favorably with last year's high of 213 cars on the same date.

Lettuce Produces Latex . . .

EL CENTRO—Automobile tires, as well as salads and bridge club sandwiches may be made of lettuce. L. G. Goar, superintendent of the Meloland field station of the University of California college of agriculture, has disclosed that tests of three varieties of lettuce showed high contents of latex. One wild variety grown, yielded 29 percent of latex from its stalks as compared with a yield of 25 percent from guayule.

Desert Air Plant . . .

THERMAL—Prospects that a large aircraft factory may be erected at the Thermal airport has been announced by government officials. The contemplated factory will be similar to one now operated by Douglas aircraft at Daggett, where planes are converted and remodeled. A concrete marker on the factory site has been set up. It is inscribed: "Property of the U. S. army and Douglas Aircraft company."

City Starts Suit . . .

NEEDLES—This city has started proceedings against the Metropolitan Water district for damages resulting from Colorado river floodwaters, which have inundated several hundred acres of city property. Floods in the area, according to engineers, have resulted from heavy silt deposits in the river channel at Needles, thereby forcing water over banks.

Who Owns Railroad Spur? . . .

NILAND—Shortage of light railroad steel led government officials to investigate an abandoned siding half buried in sand near Frink a short distance north of here. Henry B. Hickey, Jr., WPB official investigated, only to find that the Southern Pacific with which the spur connects doesn't own it and that Imperial county thinks that it does, the side-track having served a county gravel pit many years ago. But at this point Mr. Hickey bumped into a 20-year lease on the track held by the Orange County Gravel company which expires next year. That didn't help much for county records show that when the gravel pit proved too costly, the company said they were through with the plant and wanted nothing more to do with it.

Indians Serving . . .

INDIO—More than 50 Coachella valley Indians are now serving in the U. S. army or navy. Latest to go to the army is Stephen McGee, Cabezon Indian and son of Julian Augustine, little chief of the Cabezon Indians, who lives near Coachella.

Death Valley Hotel Closed . . .

STOVEPIPE WELLS—One of the oldest establishments in Death Valley, Stovepipe Wells, has closed for the duration. The hotel located at the west entrance to the national monument was built by a man who constructed the toll road originally connecting Lone Pine with Death Valley.

New Town Planned . . .

TRONA—The general land office of the U. S. interior department has approved townsite survey and plat of a new town to be named Argus and located near Trona. Public sale of properties will be announced shortly. This will be supervised by Ellis Purlee, register of the district land office, Sacramento.

NEVADA

White Way Goes Dark . . .

LAS VEGAS—The glowing white way of downtown Las Vegas known across the nation as the "last frontier" now goes dark at 2 a. m. each night and will continue to do so until the war ends conforming to a request made by General John L. DeWitt. All gambling houses will close at the same hour in an effort to alleviate a man-hour loss problem at the magnesium plant near here described as the "blackest on the Pacific coast."

Brucite Township . . .

GABBS VALLEY—Nye county officials are planning to establish Gabbs Valley as a new town to be named Brucite. A justice of the peace office may be opened to eliminate the necessity of Tonopah officers making lengthy trips to the community to conduct court.

The Desert Trading Post

*Classified advertising in this section costs five cents a word. \$1.00 minimum per issue—
Actually about 1½ cents per thousand readers.*

MISCELLANEOUS

Minerals, fossils, crystals, Indian relics, cypress knees, weapons, curios, etc. Send stamp for list. C. R. Harding, West Fork, Ark.

Desert Tea (Ephedra). Used as a tonic by the Indians. Considered by the Mormons to be possessed of unusual medicinal qualities in the relief of colds, headaches and rheumatic ailments. (See Desert Mag. Aug. 1940. P. 27.) Makes good coffee substitute. Big bundle in original form gathered fresh from desert with full directions for use, only \$1.00 cash or P. O. order. M. Brown, 1224-A 19th St., Santa Monica, Calif.

FOR SALE—12 beautiful perfect prehistoric Indian arrowheads \$1; 10 tiny perfect translucent chalcedony bird arrowheads, \$1; 10 perfect arrowheads from 10 different states, \$1; perfect stone tomahawk, \$1; 4 perfect spearheads, \$1; 5 stone net sinkers, \$1; 10 perfect stemmed fish scalers, \$1; 7 stone line sinkers, \$1; 4 perfect agate bird arrows, \$1; 5 perfect flint drills, \$1; 7 perfect flint awls, \$1; 10 beautiful round head stunning arrowheads, \$1; 4 fine perfect saw edged arrowheads, \$1; 4 fine perfect flying bird arrowheads, \$1; 4 fine perfect drill-pointed arrowheads, \$1; 4 fine perfect queer shaped arrowheads, \$1; 4 rare perfect double notched above a barbed stem base arrowheads, \$1; 5 perfect double notched above a stemmed base arrowheads, \$1; 12 small perfect knife blades of flint, \$1; rare shaped ceremonial flint, \$1; 3 flint chisels, \$1; 7 quartz crystals from graves, \$1; 10 arrowheads of ten different materials including petrified wood, \$1. All of the above 23 offers for \$20. Locations given on all. 100 good grade assorted arrowheads, \$3.00 prepaid. 100 all perfect translucent chalcedony arrowheads in pinkish, red, creamy white, etc., at \$10.00. 100 very fine mixed arrowheads all perfect showy colors and including many rare shapes and types such as drill pointed, double notched, saw edged, queer shapes, etc., location and name of types given, \$25.00 prepaid. List of thousands of other items free. Caddo Trading Post, Glenwood, Arkansas.

Assortment of 8 polished slabs all different or 8 cabochons all different \$1.90. String of rare opalized Indian grave beads 48 inches long with data \$1.95. Absolute satisfaction guaranteed. P. Smith, Sr., 2003 59th St., Sacramento, Calif.

OPPORTUNITY

FOR SALE—Famous and profitable oasis and acres in the desert on Highway 80. If you like independence, dignity, serenity, security, and freedom from the crowded world's worries, plus a home and business in the desert, here it is. Built and operated by present owner, who has made enough to retire. Very unique, artistic, spacious and comfortable. Easy for two people to operate. Profit is 50%. Now paying better than ever and will continue so throughout war period. This outstanding property has never before been offered for sale. A real chance for a couple to acquire something solid and to enjoy desert life while amassing a little fortune. Price, \$10,000; \$5,000 down. Write Box 1377, Yuma, Arizona, for full details.

LIVESTOCK

KARAKULS producers of Persian Lamb fur are easy to raise and adapted to the desert which is their native home. For further information write Addis Kelley, 4637 E. 32 Place, Maywood, California.

Karakul Sheep from our Breeding Ranch are especially bred to thrive on the natural feed of the Desert. For information write James Yoakam, Leading Breeder, 1128 No. Hill Ave., Pasadena, California.

REAL ESTATE

For Imperial Valley Farms —

W. E. HANCOCK

"The Farm Land Man"

Since 1914

El CENTRO — — — CALIFORNIA

NEVADA

Postoffice Bids Called . . .

BOULDER CITY—Call for bids on construction of post office building in new town of Henderson, Nevada, was issued by Basic Magnesium officials last month. Estimates were opened August 6 in office of Frank Switzer, purchasing agent.

Busy Beaver Trouble . . .

CARSON CITY—Beavers, planted by a rancher along a creek, built up a dam which neighbors said reduced water needed from the creek. Officials from state engineers office removed the dam but beavers immediately rebuilt another. Ranchers being damaged can remove the dams but have no authority to remove the animals—looks as if they will spend all summer tearing down dam after dam.

Post-War Highways . . .

CARSON CITY—As result of congressional action, Nevada department of highways has \$1,025,782 with which to make advance plans and surveys for post-war work, announces Robert A. Allen, state highway engineer. Funds will be used to construct approach roadways and bridges.

Youthful Farm Laborers . . .

RENO—State department of education recruited over 2,000 high school boys and girls to work on farms throughout the state this summer. Continual supply of help will be needed most of the season since there is constant demand for experienced farm workers.

NEW MEXICO

Photo Specialist Chosen . . .

ALBUQUERQUE—John H. Stryker, nationally known photographer, has been retained as official photographer for 1943 New Mexico state fair to take pictures of all champion livestock and to make complete records of rodeo events. Announcement was made by Leon H. Harms, fair manager, after conference with Stryker who specializes in livestock pictures.

Nazi Escapes Second Time . . .

FORT STANTON — Karl Luft, 21 year old German alien captured off motor ship in 1941, escaped July 25 from Fort Stanton where he had been interned. This is second time he has fled since being taken into federal custody, according to J. Edgar Hoover, FBI director.

Pecos Proposal Rejected . . .

SANTA FE—General proposal submitted by Texas representatives of Pecos River compact commission was rejected by New Mexico because Texas wanted too much of river rights and asked New Mexico to stand "unreasonable" losses. State Engineer Tom McClure said that proposal would be studied again if additional information was submitted.

Scenic Wall Paper? . . .

SANTA FE—Director Joseph A. Bursey's pride in number of requests for tourist bureau information from Nigeria, in British West Africa was slightly shaken by the 69th letter he received from there. The writer signed off by saying that if literature wasn't available, send wallpaper instead. Bursey wonders if the bureau is helping paper the walls of houses in Nigeria!

Hirohitmus—Old Man Gloom . . .

SANTA FE—Artist Will Shuster, who annually creates gigantic figure of Zozobra, "old man gloom," for fiesta in September, has given 1943 giant a second name of "Hirohitmus." It will bear resemblance to Axis dictators and will be burned as signal for start of the fiesta.

Ceremonials on Shortwave . . .

GALLUP—Inter-Tribal Indian Ceremonial was broadcast throughout world on August 15 by CBS as weekly feature "Trans-Atlantic Call." Columbia crew of 12 technicians and announcers were sent to Gallup for occasion, and program was written and planned by Alan Lomax, editor.

Mrs. John F. Huckel, 72, daughter of nationally prominent hotel chain operator Fred Harvey, died in Colorado Springs, Colorado, last month.

UTAH

Mine Donates Dinosaur Track . . .

PROVO — Well preserved dinosaur foot print, evidence of animals that roamed Utah territory in Upper Cretaceous age, was presented to geology department of Brigham Young university by Kenilworth mine from which it was taken. It is over 50 million years old and was found in Carbon county.

Celebrations End . . .

SALT LAKE CITY—Days of '47 in Salt Lake City and Pioneer Days celebration in Ogden drew to successful conclusions last week of July after gala rodeo and other events. Brilliant fireworks concluded the colorful and exciting fetes which proved to be financially very successful.

Peach Days Planned . . .

BRIGHAM CITY — Annual Peach days celebration, renewed this year after wartime discontinuance last year, will be held September 17 and 18, sponsors declare. Attractive displays, concessions, carnival attractions and other features will be centered on bond selling theme.

Veteran Rides Rapids . . .

SALT LAKE CITY—Shooting rapids of Cataract canyon on Colorado river, 74 year old Bert Loper, veteran boatman, completed his annual boat ride last month. Every summer he navigates some dangerous stream and this year was again successful.

Pleas for Park . . .

SALT LAKE CITY—Mrs. Walter C. Hurd, only woman member of city planning and zoning commission, pleaded last month for establishment by the state of parks along Great Salt Lake where private interests have leased shore places and established bathing beaches. Beaches, as state property, should be retained and beautified by the state in conjunction with planned development for all Salt Lake City, Mrs. Hurd pointed out.

A WESTERN THRILL

"Courage," a remarkable oil painting 20x60 feet, the Covered Wagon Train crossing the desert in '68. Over a year in painting. On display (free) at Knott's Berry Place where the Boysenberry was introduced to the world and famous for fried chicken dinners with luscious Boysenberry pie.

You'll want (1) A 4-color picture of this huge painting suitable for framing. (2) A 36-page handsomely illustrated souvenir, pictures and original drawings, of Ghost Town Village and story of this roadside stand which grew to a \$500,000 annual business. (3) Two years subscription (12 numbers) to our illustrated bi-monthly magazine of the West. True tales of the days of gold, achievements of westerners today and courageous thoughts for days to come. Mention this paper and enclose one dollar for all three and get authentic western facts. Postpaid. GHOST TOWN NEWS, BUENA PARK, CALIF.

100% VIRGIN WOOL HAND-WOVEN TWEEDS

A limited yardage of these beautiful fabrics is still available from our stocks. Hand-woven with painstaking care by our skilled Spanish-American weavers from original designs by Preston McCrossen; distinctive, long-wearing, easy-draping; in weights and patterns for suitings and topcoatings for men and women.

SPECIAL: 16 oz. 56 inch width herringbone weave suiting in mixtures of natural gray with light blue, bright green, natural white or gray. \$7.50 per yard. In writing for swatches please specify color preferred.

McCrosSEN
HAND-WOVEN TEXTILES
SANTA FE NEW MEXICO



BOOKS OF YESTERDAY AND TODAY

—a monthly review of the best literature of the desert Southwest, past and present.

HILARIOUS DRACHMANS LEAD GAY LIFE

A happy-go-lucky, hilarious family were the Drachmans of early Tucson. For mother, the terrible house keeper but divine cook, took in boarders against the day when father's everlasting business deals should find them broke. And with those boarders, who became practically part of the family, there was never a dull moment.

In the good old days in Arizona when you could buy almost anything and sell it for a profit, and eggs were only 12 cents a dozen, there was Chicken Every Sunday at the Drachman boarding house. Be you tramp or multi-millionaire you always could be assured an excellent dinner. (Your chances were probably better if you were a tramp.) In the book CHICKEN EVERY SUNDAY, Rosemary Drachman Taylor tells the story of her life with mother's boarders during those delightful times—and an equally delightful book is the result.

There was the charming Miss Sally who lived only for Miss Sally and didn't have any friends because she spent all day cold creaming herself and taking baths. And Jeffrey, the unhappy and unwilling poet who was loosed from doting mother's apron strings when his teeth were knocked out. You'll never forget the Drachman's briefest visitor, the impossible old Mrs. Moon who yodeled when she "wasn't herself."

Interwoven among the episodes about the boarders is the homely, amusing story of the Drachman tribe and their emotional and financial ups and downs. You will tolerate the three mercenary offspring, love father, and adore mother, wishing you had been lucky enough to have known them—when they had Chicken Every Sunday.

Whittlesey House, New York. 307 pp. 1943. \$2.75.

—Aliton Marsh

TWO UNIVERSITY BOOKS PRACTICAL SPANISH GUIDES

PRACTICAL SPOKEN SPANISH and PRACTICAL HANDBOOK OF PRONUNCIATION are two publications conducive to complete mastery of this popular language.

The author, F. M. Kercheville, Ph.D., departs from the usual method of instruction in that the emphasis is placed on sounds and pronunciation and on vocabulary building, with a minimum of text dealing with grammar essential to conversational Spanish. "The chief object of the text is, therefore, to stimulate interest in

the Spanish language, and to allow that interest to carry the students through to a more thorough working knowledge of the language." These sections are included in PRACTICAL SPOKEN SPANISH, which also includes a chapter on "Stories of the Spanish Southwest" and "Verbs and Idiomatic Expressions."

The Handbook on Pronunciation is a simple, practical guide to proper pronunciation of both Spanish and English, using the bi-lingual procedure.

Published by University of New Mexico Press.

Practical Spoken Spanish, 1934, 154 pp., \$1.00.

Practical Handbook of Pronunciation, 1936, 57 pp., 50 cents. —E.H.

NAVAJO FAMILY LIFE IS SETTING FOR JUVENILE

Navajo ideals of honor and bravery set the theme for the story, DAUGHTER OF THUNDER by Grace Moon. Presented in language understandable to her extensive juvenile audience, the author tells with sympathetic understanding how Doleh who is 12 years old proves herself worthy of the heritage which is hers.

There is a great dance festival but while her grandfather plays and sings and she dances to the somber drum beats, Doleh knows she must find a solution to the great problem facing her people. How she does this, provides suspense and the thrill of mystery but at no time does the action eclipse the courageous, honorable determination of the little Navajo girl.

Macmillan Company, New York. 184 pp. \$2.00. —Marie Lomas

FIRST AUTHENTIC HISTORY OF GRAHAM-TEWKSBURY FEUD

A picturesque crowd gathered one still autumn day in 1886 at the Graham cattle ranch in northern Arizona when news spread across the valley that The Threat had become a reality. The Tewksbury forces were driving sheep into the jealously guarded ranges of the Graham family—like a swarm of locusts the animals could trample and lay waste the rich pastures of Pleasant valley. Angry cattlemen were determined to keep the land free for their own herds.

Thus began the fierce and sanguinary feud that spelled grief and tragedy for both families, "down to the last man." With accuracy and care Earle R. Forrest presents the complete story of the famous Graham-Tewksbury vendetta in his ARIZONA'S DARK AND BLOODY GROUND. Out of a land of wild beauty and vast, purple distances came a hate so

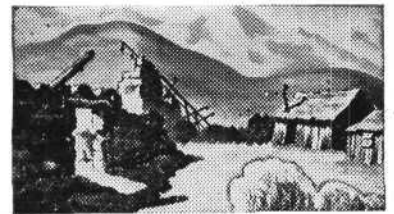
bitter as to destroy peace and rest in the Tonto Basin country for many years.

The Indian blood of the Tewksbury boys and the fiery tempers of the Grahams decreed that the war would be fought an eye for an eye, a life for a life, until the last gunman met his fate. The grim story of these events is so brilliantly and frankly told by Earle Forrest that most Western fiction becomes mild and temperate in comparison.

The Caxton Printers, Caldwell, Idaho, 1936. Illus. Notes, biblio., index, 370 pp. \$3.00.

—Aliton Marsh

TALES OF LOST GOLD



The thrill of man's struggle to find legendary lost gold mines of the West pulse through Philip A. Bailey's "Golden Mirages." It is a gold mine of Americana, containing the history, legends and personalities of old California and the Southwest—the gift to give this Christmas.

"Without question the most complete record of Pegleg Smith lore ever to be printed"—Randall Henderson.

Colorfully illustrated with photographic halftone engravings, bibliography and index.

\$3.50

DESERT CRAFTS SHOP
636 State St. — El Centro, California

THE FANTASTIC CLAN



As enjoyable as a good travelog. Tells you how to "call by name" the odd members of the spiny clan of the desert.

THE FANTASTIC CLAN by Thornber and Bonker, describes with charm and accuracy the strange and marvelous growth on the desert. An informal introduction to the common species in their native habitat, including notes on discovery, naming, uses and directions for growing. Many excellent drawings, paintings and photographs, some in full color. Endmaps, glossary, pronouncing vocabulary, index.

\$3.50

DESERT CRAFTS SHOP
636 State St. El Centro, California

GEMS AND MINERALS

ARTHUR L. EATON, Editor

SAN DIEGO CLUB CONVERTS TO WARTIME BASIS

Due to the changes brought about by war-time emergency, San Diego mineralogical society has found it necessary to form a new constitution under the direction of R. W. Rowland, N. W. Balcom and R. D. Alexander. Changes in membership, restricted travel, and lack of a permanent meeting place have made it advisable to change their rules so that the society still may preserve interest in minerals in the community.

The study of geology and minerals at home interests many of the members. At one meeting, Albert Parr spoke on the commoner pegmatite minerals of San Diego county with reference to tourmaline, lepidolite, feldspar, quartz and topaz. Various other members have given details of their visits to the Laguna mountains and shown specimens of garnet from that location.

An interesting note is the clamor of service men for continued exhibits of minerals at the Army and Navy Y.M.C.A. They are particularly interested in specimens from their home states.

KODACHROME SLIDES OF AGATE SECTIONS SHOWN

J. Lewis Renton, president of Mineralogist Publishing company of Portland, Oregon, discussed the "Art of Color Photographing Minerals and Polished Specimens" for the Northern California mineral society at their general meeting July 21.

Mr. Renton's achievements in this field are well known throughout the coastal area, and his lecture was highly interesting. He exhibited a complete set of kodachrome slides of hundreds of sections of thunder eggs, iris agate, Nevada opal, and various other landscape agates.

CHINESE GEM DEALER LECTURES ON JADE

I. L. Chow, a well known gem, curio and jade dealer of Los Angeles, spoke to the Pacific mineral society on "The Significance of Jade to the Chinese and Its Appreciation." Mr. Chow was born in Hangchow, and for many years collected rare specimens of jade and other semi-precious stones. He spoke with authority on jade, its cutting, history and meaning to the Chinese.

These people use many tools in their art of carving the stone. The sawing is done with a toothless iron saw worked by two men, other saws and small iron tools are used, and the final carving is done with a diamond drill. Mr. Chow stated that a piece may take years to fabricate—time was not important, since carving was one of the oldest arts and was done with great care.

To the Chinese, jade is a luck piece to bring good health, ward off evil, increase wisdom, power and victory. Of the three varieties of jade, the colors most venerated are the mutton fat with vermilion spots and the bright spinach green flecked with tiny specks of gold and lavender.

ARIZONA SOCIETY HEARS FIRST VOLCANO REPORT

Dr. Frederick H. Pough of the American Museum of Natural History, New York, at a special meeting June 29 gave Mineralogical Society of Arizona the first lecture to be heard in the United States on the latest development in the realm of geology—the fast growing volcano, Parícutín, in Michoacán, Mexico. Dr. Pough had just returned from the volcano, where he made observations for the museum, which he summarized in entertaining manner.

For the benefit of those unable to attend the June meeting, the volcano was further discussed at the regular, July 8, meeting in the home of Vice-President Luther Steward.

BLACK SAND OF VOLCANO BURIES COUNTRYSIDE

The new Mexican volcano, which is known as "El Parícutín," already has done irreparable damage to a surrounding area almost as large as the state of Massachusetts. This volcano started in the center of highly cultivated farm area in the mountains west of Uruapán, state of Michoacán, Mexico. While the lava actually did some damage to the town of Parícutín, and completely destroyed all crops in the nearer valley, it was the vast quantity of black sand hurled from the crater which has buried and destroyed crops, villages, forests, birds, animals, almost everything within a radius of 50 miles.

MEXICO RECOVERS STOLEN DIAMOND

The Mexican government reports recovery of the famous Vanderbilt diamond, which was stolen about one year ago. Mexican police have been carrying on a quiet search for a year, and at last have found the stolen stone, which weighs over ten carats and is claimed to be worth \$100,000 because of its fineness and color. As soon as the stone was recovered, and before the owners were notified, exhaustive tests were carried out to prove the identification. Government experts and experts from the national pawn shop carried out the tests and proved the stone to be the one so long sought for by the police of the two countries.

MEXICANS ESTABLISH MODERN GEM FACTORY

Queretaro, Mexico, long famous for fine opals, and also long famous for the crude hand methods used by the natives in cutting and polishing opal, at last has a modern, up to date, electric factory equipped with all that modern science can give in way of equipment. Joaquín Ontiveros and sons, owners of the great turquoise mine at Zacatecas, Mexico, are the new owners. They do not plan to restrict themselves to local materials, but already are cutting sapphires, topaz, aquamarines and other fine stones. Ontiveros speaks English well, and learned at least part of his trade in the United States.

COLORFUL MINERALS

SULPHUR

Few amateurs ever think of sulphur as anything but the yellow powder often found in the drugstore, but to the mineralogist it is both interesting and colorful. It occurs in many ways, chiefly from volcanic action, the breaking down of sulphur dioxide gas or of metallic sulphides. Its color varies from the familiar glistening yellow through green, grey, brown and reddish, to almost any known color or combination of colors, due to metallic or other impurities.

Often it is found in the pure form or mixed with alum, clay, selenium, celestite, etc. The variety is infinite. Crystals may be tabular, sphenoidal or pyramidal and the great masses of crystals often are very showy, especially if there happens to be an admixture of other bright colors with the typical yellow.

Hearts and Pendants

No article of adornment is more cherished than a beautiful heart cut from an Australian Opal in Lucite. If you require a gift for a birthday, an anniversary present or for Christmas, you could not find a more appropriate symbol of your remembrance.

These hearts are all double cabochon cut and highly polished on both sides. Yellow Gold Filled or Sterling Silver bails are attached and the sizes vary from 1 1/4-1 1/2 inches. Tear drop pendants from 1-1 1/2 inches long. Hearts and pendants priced at . . .

\$4.00 — \$5.00 — \$6.00

Yellow Gold Filled Charms set with Australian Opal in Lucite: Plain round 3/4 in. face \$4.00, round with fancy edging 1 in. face \$5.00-6.50.

YELLOW GOLD FILLED BROOCHES SET WITH AUSTRALIAN OPAL IN LUCITE

Round models, fancy edging 1-1 1/4 in. \$4.50 to \$7.50, 1 1/2 in. \$6.50 to \$10.00. Oval models, fancy edging 1 1/4-1 3/8 in. \$5.00 to \$7.50.

NEW STOCK OF YELLOW GOLD FILLED MOUNTINGS

BROOCHES—round fancy edging \$1.25-3.00
BROOCHES—oval fancy edging \$2.00-3.00
CHARMS—round plain style 75c - \$1.00
CHARMS—round, fancy edging \$1.25-2.00

What stock of surplus minerals or rough cutting materials do you have? We will buy in lots of 100 lbs. or more.

Our 1943 JUBILEE CATALOG contains a complete listing of ROUGH GEM MATERIALS, choice gem stock in sawed slabs suitable for polished specimens, cabochons, hearts, and pendants. Also our LARGE STOCK OF GEM MATERIALS CUT IN FINISHED CABOCHON SETS. ALL SHAPES AND SIZES. In order to distribute this catalog to those most interested, we are asking you to send us 15c in STAMPS.

OUR SHOP IS STILL CLOSED TO THE PUBLIC UNTIL FURTHER NOTICE.

WARNER & GRIEGER

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PASADENA 4, CALIFORNIA

Our Phone Number is SYcamore 6-6423

EXPERTS CHECK MINERAL COLLECTION FOR MUSEUM

The mineral collection of Dr. S. L. Lee of Carson City, Nevada, assembled over a period of years as a hobby, has undergone a thorough checking before being placed on exhibit at the Nevada state museum.

Jay A. Carpenter, director and professor of mining, and Walter S. Palmer, professor of metallurgy at the University of Nevada, spent nearly a week carefully going over the several thousand specimens of minerals. They were spread out and sorted in rooms not open to the public, and the experts discovered many classic examples from early Nevada mines.

With ultra-violet light and hydrochloric acid, the mineralogists were able to quickly and expertly identify all doubtful minerals suspected of masquerading under an alias. Streak tests also were used to correctly place the many specimens.

Segregating the collection in alphabetical order now has been accomplished so that all Nevada gold ores, silver ores, and other minerals will be readily accessible for future exhibits for the public.

Los Angeles lapidary society has been having backyard rock trips. They picnicked July 17 at the home of Herbert Monlux, and August 8 they met in Belle Rugg's backyard.

AMONG THE ROCK HUNTERS

Leslie Richards, of the Colorado mineral society, recently went on a prospecting trip in Death Valley, hunting minerals with his fluorescent lamp. He returned home with a fine selection of fluorescent specimens. He has been devoting most of his time to cutting quartz crystals for radio frequency and searching for quartz of the required quality.

Russell Grube, San Jose, is planning to organize a lapidary society. About 30 interested persons in three counties have been invited to an organization meeting. If interested write him at P. O. Box 124.

J. S. Forbes demonstrated his apparatus for drilling cores in clock mounts at August 2 meeting of Los Angeles lapidary society. Robert Herron, former member of the society, gave a lecture on Utah geology, illustrated with kodachrome slides. Next meeting is scheduled for September 13, at which I. L. Chow will talk on jade and James Arnold on obsidian.

Mineral notes and news, July copy, has an interesting study on tin by Joseph Murdock, UCLA, besides comprehensive reports of mineral club activities.

Don Major, president of Northwest federation of mineral societies, Tenino, Washington, has just completed the 1943 supplement to the 1942 directory of societies in the northwest federation. Any society marked "federation exchange" would like to trade 100 pound sacks of specimens by freight with other groups. Interested societies may obtain copies of the directory from mineral notes and news or from President Major.

Golden Empire mineral society announces following officers for 1943-1944: Russell Beal, president; Kathleen Owens, vice-president; Jessie G. Ross, secretary-treasurer; Howard Little, federation director; Mrs. I. Bedford, entertainment chairman; Anna Marks, publicity chairman; Kathleen Owens, Anna Marks and M. I. Bedford, directors.

Mora Brown of Riverside addressed Orange Belt mineralogical society at the regular June meeting held in Fairmount park, Riverside. Her subject was the prehistoric Indians who roamed the Gila and Salt river valleys and the Casa Grande region.

GEM MART

ADVERTISING RATE
5c a Word — Minimum \$1.00

Swisher Rocks and Minerals, also Corals, Shells, Statues, etc. We also buy mineral species and woods. Must be good. Swishers, 5254 So. Broadway, Los Angeles 7, Calif.

SOMETHING NEW! Have you ever seen Black Tourmaline with Garnet inclusions? We have them, priced at 50c, \$1.00 and \$1.50. This is the first time we have seen this interesting combination, and you will want it for your crystal collection. MICA CRYSTALS, California material. This is new material, just received. Good crystals for your Dana collection. Generous specimens 50c to \$3.00. Chuck and Rocky, 201 Broadway Arcade, 542 So. Broadway, Los Angeles 13, Calif.

Minerals, Fossils, Gems, Stamps, Coins, Pistols, Glass, Bills, Indian Relics, Bead Work. Catalogue 5c. Las Cruces Curio Store, Las Cruces, New Mexico.

Montana Moss Agates in the rough for gem cutting \$1.00 per lb. plus postage. ELIOTT'S GEM SHOP. Petrified Picture Wood and Moss Agate Jewelry Hand Made in Sterling Silver Mountings—Rings, Bracelets, Necklaces, Brooches, Tie Slides, etc. Mail orders filled anywhere in U.S.A. 26 Jergins Arcade, Long Beach, Calif.

ROCK COLLECTORS ATTENTION—GET ACQUAINTED OFFER—Send two dollars war stamps or coin, for five showy specimens of Rainbow Rock, Tourmaline, Chalcantite, Limonite Pseudomorphs, Iron Pyrite, Inclusion QTZXL, Fluorite, Beryl, Hematite XLS., Martite, Pecos Diamond, Quartzoid, Neptunite, Topaz, Iceland Spar. All 15 for \$5.00. The Rockologist Chuckawalla Slim, 627 E. Garvey Blvd., Garvey, Calif.

CABOCHON CUTTERS with our unnamed mixture of good cutting material sawed ready to shape cut and polish you can finish several fine stones. 25 cents for two ounces and with money back guarantee. Gaskill, 400 North Muscatel, San Gabriel, Calif.

HERE ARE BIG BARGAINS . . .

Rare Crystals of all kinds, \$1.50 and up. Montana Sapphires, cutting quality, 60c a carat. Sawed California Geodes, 25c and 50c each. Send for my Gem List, 10c, cost returned on first order. Specimens can be returned if not satisfactory. The Desert Rats Nest, 2667 E. Colorado, E. Pasadena, Calif.

ANTIQUE JEWELRY — Locket, brooches, chains, rings, etc. 12 assorted, \$3.00. B. Lowe, Box 311, St. Louis, Mo.

AGATES, Jaspers, Opalized and Agatized woods, Thunder eggs, polka dot and other specimens. Three pound assortment \$1.50 postpaid. Glass floats, price list on request. Jay Ransom, 1753 Mentone Ave., Pasadena, Calif.

ZIRCONS—OPALS—CAMEOS — 3 Genuine diamond cut Zircons (total 2½ carat) \$2.75. Twelve Genuine Opals \$1.50. Twelve Genuine Cameos \$2.50. B. Lowe, Box 311, St. Louis, Mo.

INDIAN RELICS, Beadwork, Coins, Minerals, Books, Old Buttons, Old Glass, Old West Photos, Weapons. Catalog 5c. Vernon Lemley, Osborne, Kansas.

100 JEWELRY STONES removed from rings, etc., assorted \$2.00. B. Lowe, Box 311, St. Louis, Mo.

LAPIS LAZULI from Italian Mountain, Colo. Equal in color and quality to finest specimens in Smithsonian. Sawed pieces about 3/16 inch thick, with hard white matrix, at \$2.00 per oz. Finest quality, sawed slabs, deep Ultramarine Blue, matrix of gold pyrites, at \$4.00 per oz. ENDNER'S, Gunnison, Colo.

ROCKHOUNDS . . .

We have a large stock of Cabinet specimens, Gem material, Cut stones, Mineral books. We want to buy good gem material and specimens. Come and see us and join our Rockhound Colony.

THE COLORADO GEM CO.
Bayfield, Colorado

In place of a July field trip, Boston mineral club held a picnic and mineral exchange at member Bogart's home in Wellesley. June field trip took the group via train to Pawtucket, Rhode Island. Professor Quinn, geologist of Brown university, conducted the tour to Cumberland hill, Sneece hill pond, Iron mine hill and Copper mine hill. Rhode Island planning commission publicized the trip.

Dr. Mars Baumgardt lectured to Los Angeles Dana mineral club at July 9 meeting on a Southwest vacation and the geology of the area. "All the joys of a field trip," says the bulletin, "and none of the hardships, when you travel in pictures with a master guide." A. B. Zimmerman led the quiz and study hour, July 17. Henry R. Newitt is president of the Dana club.

New heading on the East Bay mineral society bulletin carries the picture of a Berkeley hills nodule. The group meets first and third Thursdays, except during July and August, in the auditorium of Lincoln school, Eleventh and Jackson streets, Oakland, California.

The deposit of lead oxide near Queretaro, Mexico, which was discovered and developed by Joaquin Ontiveros, is now being mined for shipment to a company in Mexico City, which is using the entire output in its manufactures.

Weather

FROM PHOENIX BUREAU

Temperatures—	Degrees
Mean for July	92.0
Normal for July	89.8
Highest on July 25	115.0
Lowest on July 4	68.0
Rainfall—	Inches
Total for July	0.25
Normal for July	1.07
Weather—	
Days clear	15
Days partly cloudy	11
Days cloudy	5
Percentage sunshine	78
Normal percentage sunshine	83

Arthur L. Eaton returned from a trip to El Parícutín volcano in Mexico so browned that his family scarcely recognized him. "Well, what can you expect," said he, "when you've spent a few weeks in a place so hot that the rocks are melted and flowing over the countryside?"

Peter W. Burk, 1018 Columbia, Redlands, California, is acting secretary of Orange Belt mineralogical society.

Gunnar Bjareby conducted a "gala fluorescent night" July 6 at New England museum of natural history for Boston mineral club. Over 200 specimens were shown. Fluorescence is proving valuable in industry. One use is in detecting flaws in metal. The metal part is first soaked in penetrating oil, then dried and dusted with a fluorescent powder. Where defects or cracks are present, the oil absorbs the powder and weak spots are easily detected under the ultra violet lamp.

Field museum, Chicago, has a wonderful mineral collection available to anyone who wishes to examine it. Dr. Henry W. Nichols is chief curator of geology at the Chicago institution.

Roscoe Whitney of New England industrial research foundation spoke on New England minerals in the war effort at June 1 meeting of Boston mineral club.

Walter W. Bradley, California state mineralogist, reports that 1942 production of dolomite exceeded all past annual outputs. Most of the 142,557 tons, valued at \$413,469 came from six California counties. Dolomite burned for lime was not included in this estimate but in the lime tonnage. 1942 production of sodium salts also was largest on record. Soda ash is used mainly in the manufacture of soap, glass, paper, oil and sugar refining and chemicals; trona is used for metallurgical purposes; salt cake or sodium sulphate is used in the manufacture of paper, glass and in chemicals.

DESERT QUIZ ANSWERS

Questions on page 1A.

- 1—Obsidian.
- 2—Applying pressure with deer antler point.
- 3—Fremont river.
- 4—Laguna reservation.
- 5—Holbrook.
- 6—900 years.
- 7—1908.
- 8—Boulder dam.
- 9—Ground sloth remains.
- 10—17 million years.
- 11—Added area south of Gila river to present international line in Arizona and New Mexico.
- 12—Arrastra is used to crush ore.
- 13—Former name of Zion national park. When a portion of Zion canyon was set aside as national monument in 1909 by President Taft it was given the name of Mukuntuweap. Nine years later President Wilson changed the name to Zion. Given status of national park in 1929; area enlarged, 1930.
- 14—Superstition mountains.
- 15—Frederick V. Coville.
- 16—Flasks.
- 17—Agave, or desert century plant.
- 18—Epic novel about Mormon religion and colonization.
- 19—Stone.
- 20—Charles Keetsie Shirley, Navajo artist.

Did You Know That Calcite . . .

- 1—Is a form of limestone?
- 2—Is metamorphic?
- 3—Forms perfect rhombohedrons?
- 4—Appears as dog tooth spar?
- 5—Has a standard hardness of 3?
- 6—Fluoresces red, white, salmon, etc?
- 7—Is one of commonest minerals?
- 8—Has a specific gravity of about 2.7, but varies much?
- 9—Is sometimes granular or fibrous?
- 10—Is almost identical with aragonite except in molecular and crystal structure?
- 11—Varies to form more than 20 varieties of crystals in the rhombohedral system?
- 12—Occurs all over the world?
- 13—Is doubly refractive to a very high degree?
- 14—Is a carbonate of calcium?
- 15—Is another name for Iceland Spar?
- 16—Forms colorless masses?
- 17—Is often yellow, black, brown, golden, blue, pink, salmon, white or purple?
- 18—Is oolitic?
- 19—Forms "bird's nest" calcite?
- 20—Is brittle and scratches easily?
- 21—Forms stalactites and stalagmites?
- 22—Seldom has real value except as Iceland Spar?
- 23—Is sometimes found as crystals in quartz geodes?
- 24—Is an essential part of dolomite?
- 25—Forms all kinds of marble?
- 26—Is sometimes phosphorescent?

California division of mines announces that bulletin 118—geologic formations, and economic development of the oil and gas fields of California—is now available in four parts, paper bound in three volumes \$4.00, cloth bound in one volume \$6.00.

About 100 miles northeast of Queretaro, state of Queretaro, Mexico, American and Mexican interests are beginning development of large medium grade lead deposits. These deposits are mostly galena and cerussite. There seems to be very little anglesite in evidence in the deposit. The ore is to be refined and shipped to the United States.

Don Graham, member, talked on paleontology at the July 8 meeting of San Fernando valley mineralogical society.

Dinuba members of Sequoia mineralogical society were hosts at the July picnic held in Dinuba city park.

Sequoia bulletin prints addresses of members who have left the district to join the armed forces or to work in defense industries. Correspondence with absent members helps hold the group together.

Orange Belt mineralogical society met for a covered dish dinner in August at Sylvan park in Redlands, California.

Mabel Andersen was appointed custodian of Sequoia mineral society's equipment to succeed Dora Andersen who has joined the women's army corps.

Virginia L. Ashby opened her mountain cabin to 40 members and guests of Orange Belt mineralogical society for a covered dish dinner July 11. Dr. D. H. Clark presided at the business meeting in the absence of president R. H. Eells. R. B. Peters of San Bernardino talked on climate, geology, minerals and old Spanish methods of mining in Mexico. Lowell Gordon, president of Long Beach mineral society, one of the guests, spoke on the activities of his society.

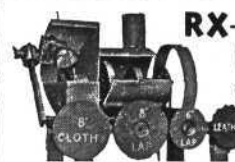
Cogitations . . .

Of a Rockhound

By LOUISE EATON

After the duration is over, rockhounds is goin' to give a vote of thanks to the desert soljers who've built roads to 'n through field trip territory. It'll sure be comfortin' to be able to visit a geode location without fear of wreckin' a tire or two. If some of the boys in desert camps is rockhounds, they can enjoy their desert trainin' in spite of work 'n weather. They'll probably convert other soljers, too, 'n swell the rockhound ranks.

Sometimes a fella is a rockhound 'n don't know it. He just thinks he enjoys gatherin' up pretty rocks 'n havin' a few specimens polished so's he can see how beautiful they is inside of 'em. But a word of encouragement from a active rockhound'll start him in the right direction 'n he'll join up with a mineral society, 'n then he's all set to gets lots of fun 'n instruction outta his pastime.



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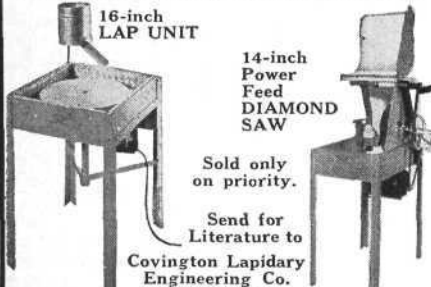
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AMATEUR GEM CUTTER

and polishing equipment. Leland Quick, who conducts this department, is former president of the Los Angeles Lapidary society. He will be glad to answer questions in connections with your lapidary work. Queries should be addressed to Desert Magazine, El Centro, California.

By LELANDE QUICK

Remembering that the Indians gave away Manhattan Island for about \$24 worth of beads the enterprising American soldier has been able to get the South Sea islanders to build landing strips for a bauble that would be given free when you hit two lemons and a plum on the machines at Las Vegas. Capitalizing on the savage characteristic for adornment there has been set in motion in several quarters collection agencies for the receipt of unwanted "costume" jewelry. The thought occurs to me that many amateur lapidaries could give away with legitimate reason some of the cracked cabochons that clutter their collections.

It is claimed an American soldier can get a half dozen big fox holes dug for a single bead. What could he accomplish with a misshapen cabochon of cracked moss agate or a rude heart of petrified wood? I have seen magnificent arrays of cabochons that have been spoiled because the owner did not have the courage when he attained skill to discard some of his earlier work. Now is the time to clean up the collection and put to good use some of the junk that keeps almost every collection from being labelled "fine." If you have that desire I am sure there is a collection agency of some sort in your own community but if there is none send them on to me and I'll tell you where they go. You could sprinkle in a good stone or two for some special job.

Some folks think that the recent wave of decorative jewelry manufacturing is evidence of a return of savage instincts but they use the wrong word. It is the sensible return of one of the first acquired characteristics of civilization, the desire for personal adornment. Only man of all the animals adorns his person to make it more attractive and the rudest savage puts a ring in his nose before he dons pants. The significant thing is that we have acquired a greater refinement of taste in the things with which we adorn ourselves. I decry the fact that plastic materials are having a vogue because we temporarily do not have metals for the proper setting of stones. Certainly more imagination has been encountered in the past ten years in the making of costume jewelry than existed in all the previous century.

Until Kunz began to write about gems in the eighties no American had contributed much and we depended for our information about gems on the English writers. Their writings were colored by their own opinions and standards so that for more than a century the only accepted gems were diamonds, opals and pearls. This changed when some one died, for then people who never had adorned themselves in their lives felt it necessary to show their respect for the dead by wearing ear rings, necklaces, bracelets and rings—always made of jet. I am glad this sombre note has disappeared from the scene and that people do adorn themselves even though a lot of the adornment is still in bad taste.

In 1867 Harry Emanuel published his book "Diamonds and Precious Stones" and it made the lapidaries as mad as a catcher who misses the catch on the third strike. Emanuel exposed the ways of faking gems and gave away many of the trade secrets of the professional lapidaries but it made the public conscious that there were other gems than the big three and it started a vogue for new gem materials for the decoration of the then popular personal possessions—canes, umbrellas, snuff boxes and

hat pins. Many a prosaic snuff box was inlaid with precious opal from Hungary and they probably still exist in attics and trunks. I recently saw a salvaged umbrella handle of carved ivory that is being made into a magnificent letter opener at my suggestion. Look over grandma's effects and see if you can't salvage some cutting material, much of it unprocurable today. "In those days," says Emanuel, "the finest rock crystal was only worth a shilling a pound, the finest diamonds worth about ten pounds a carat."

An interesting letter from Marian Milligan, postmistress at Hinkley, California, asks among other things, "Is cracking a characteristic of opals and is their value based on such a condition? What causes the cracking and is opal dug at great depth free from checks?"

With the exception of the diamond no precious or semi-precious gems, including the opal, exists at any great depth and I don't believe the opal at Hinkley is good at any depth. The opal is more susceptible to cracking than other gems. This is due to heat but the greatest cause of cracking is the release of stress from within rather than applied pressure from without. It formerly was believed that opals glowed with warmth and old time opal dealers always warned an opal in their hands before showing it to a prospect. I once met a doctor whose wife had given him a magnificent wedding ring set with a limpid blue opal as large as a nickel. It had become a dull, lustreless mass of cracks as the doctor always wore it out of sentiment, washing his hands many times a day in very hot water and strong solutions. In that condition it was valueless and he admitted that he had looked upon it as a bauble and not the precious thing it was. I have met many people who failed to appreciate the value of their gem possessions because they were ignorant of their qualities. The care given diamonds by the average person is shameful.

Dr. R. S. Galbreath of Huntington, Indiana, says he has trouble with flats. He gets perfect surface on two sheet iron laps with FF carborundum. "That is where I stop," he says. "My polish is dull, not high like the pieces I buy. I use a wooden wheel and it bounces over, the sandpaper cuts streaks in the face. I polish, until I am black in the face, on the felt wheel with pumice and I can't get a polish."

The good doctor probably has a hard wheel covered with paper instead of a padding of felt or rubber underneath or else it wouldn't cut scratches. Try 120 paper and then 220 and switch to tin oxide instead of pumice and I think you'll hit it. Some men continue lapping with 600 and then 900 and then go right to the felt wheel. Remember that when you lap you roll the grit and when you sand you slide it so that a sander is quicker but you risk the heat. However you must have padded sanders be they drum type or wheels.

DID YOU KNOW . . .

- At one time all diamonds came from India, from a section named Golconda. That is why the word Golconda is a synonym for anything wonderfully rich.
- The custom of the diamond engagement ring on the left hand is a Roman tradition.

Mines and Mining . .

Washington, D. C.

Authorized release of 4,500 men from army to work in copper, zinc and molybdenum mines was announced recently by Robert P. Patterson, acting secretary of war. Failure to relieve labor shortage with civilian help caused release of soldiers from Ninth Service Command to fill vital jobs in mines, but no individual will be sent against his will.

Winnemucca, Nevada . . .

Forty pounds of quartz crystals taken from newly discovered Crystal Quartz mine near Denio have proved to meet government requirements. Owners of the mine containing what is known as America's number one critical material are Harry Major and Clayton Block.

Las Vegas, Nevada . . .

Metals Reserve company is purchasing newly mined oxidized zinc-lead ores suitable for treatment in Waelz process. Purchases are made at depot at Jean, Nevada, according to dispatch in Denver Mining Record. Program is established to buy small tonnages of ore from different producers.

Safford, Arizona . . .

In an effort to speed production of critical materials for war, eight miles of Aravaipa access mine roads recently have been constructed. Roads, from Aravaipa headquarters to Iron Cap, Headcenter, Arizona Shaft and the Abe Reid mines, will make available large deposits of lead and zinc which are in great demand at this time.

Phoenix, Arizona . . .

Despite protests of member D. C. O'Neil, state tax commission boosted mine valuations \$50,978,592.98 for ad valorem tax purposes, highest since 1931. Morenci branch of Phelps Dodge corporation took greatest boost, and officials declare that valuations will be raised again next year if conditions remain favorable.

Las Vegas, Nevada . . .

Minimum 100 tons per day mill capacity was predicted last month for Silver Dyke and Tungsten mine. Tungsten concentrator and remodeling of Kernick mill assure large tonnage of good milling ore for next two years.

Deming, New Mexico . . .

Great surge of oil wildcatting is being experienced in this state, said John Kelly, state geologist, naming 16 wildcats in oil and non-oil producing counties. Deep tests are being drilled in Chavez, Eddy, Lea, Rio Arriba, San Miguel and San Juan counties.

Las Vegas, Nevada . . .

Nevada Scheelite and Basic Magnesium mines are suffering from labor shortage, managers recently have announced. Call was made for mine workers, skilled and unskilled, to return to vital work of producing metals. Ore and capacity for needed increases in production are available, awaiting only additional laborers.

Kingman, Arizona . . .

Probable increased capacity of Boriana mine of Molybdenum Corporation of America is 1,750 units of tungsten and one carload of copper. According to W. H. Munds, resident manager, about one-half of ore body has been developed and two-year supply is in sight.

Winnemucca, Nevada . . .

Leaching, water process for recovering waste ores, is producing 15,000 pounds of copper per day from dumps of overburden at Ruth pit, Kennecott Copper, Walter Larsh told engineers at a recent meeting. Twelve million pounds of so-called waste copper have been recovered from Molly Gibson and Sunshine mines so far.

Winnemucca, Nevada . . .

Majuba mine, said to be only tin producer in United States, shipped its first carload of ore from Greenan-Kerr lease last month, says James Greenan, superintendent. In going into production, Majuba repeats first World War performances, and good scale is expected to continue all summer.

Battle Mountain, Nevada . . .

Revelation group of six lead-silver claims in Humboldt county have been acquired for lease and purchase option by Fred Lenz, Arizona mining operator. Considerable ore has been found by long tunnel, shallow shafts, drifts and winzes.

Niland, California . . .

Journal of mines and geology reports about 40 natural carbon dioxide gas wells producing along southeast shore of Salton Sea. Industry of converting gas into dry ice was started in 1933 and has expanded constantly. There are now about 50 uses for carbon dioxide gas, liquid and solid. It has double the refrigeration effect of wet ice, and passes away in air without leaving any moisture, as does water ice. It is believed the gas has resulted from action of superheated steam and other gases on sedimentary carbonate rocks; it is noted that lime rocks are present near the producing horizons.

Indio, California . . .

Operations at rich Iron Chief mine 63 miles east of here will start in September, Harlan H. Brandt, head of Riverside Iron and Steel corporation revealed last month. At meeting of board of supervisors, it was asked that valuation of corporation be reduced from \$504,000, and plans for transporting of ore were laid. It is planned to deliver product to Kaiser Steel mills, Fontana.

Mojave, California . . .

Potential "Comstock Lode" was discovered on property of Mrs. Josie Bishop by Professor Charles N. M. Wright, with aid of new Radar geo-physical instruments. Tin ore, radium, and a water channel were also detected from exhaustive tests made with the instruments.

Goldfield, Nevada . . .

President Roosevelt signed bill authorizing sale of government owned silver to individuals, corporations or government departments at 71.11 cents per ounce. Silver, to be sold until six months after termination of war, will be for domestic use only, its chief purpose to replace copper as electrical conductor.

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By RANDALL HENDERSON

BUSHTOWN, AFRICA (With the U. S. Armed Forces)
—Like most primitive people, the natives in this part of Africa are skillful with their hands. Given a few simple tools, they soon become good craftsmen. Across the camp street from my office a new barracks building is going up. Native carpenters and masons and painters and plumbers literally swarm over the partly finished structure. Generally about half of them are idle. These natives have no intermediate speed. Either they are hammering away in high gear, or else they are not working at all. There is no such thing among them as slow motion. They sing and whistle as they work. I am sure they are the happiest people on earth.

They may be lacking in some of the virtues which we white folks identify with civilization—but they have much patience and tact. They have been schooled in diplomacy by certain tribal customs. The men of the family live together in one compound, and the women in another. Can you imagine all the mothers and daughters and granddaughters and daughters-in-law of one big American family dwelling happily together in a little cluster of grass huts with a bamboo fence around them? Yes, they learned tactfulness long before the white man came to this country.

* * *

The native men are friendly, but also very humble in the presence of the white man. They accept him as "mastah" without question. Some of them carry it to an extreme. But not big Nicko, the head boy in one of the maintenance crews in my department. I suspect Nicko has royal blood in his veins. He has dignity. He does his job well and it pleases him immensely that I deal with him as an equal. It is hard to understand his English, but he solved that problem without loss of face for either of us. When he wants instructions he scribbles his question on a page in his notebook and has one of his boys deliver it to me.

* * *

One of the native boys in my labor crew worked as a tailor before the American army came to Africa. Occasionally I have a task for needlework and then I pull him off his pick and shovel job and let him work at his trade. Recently he repaired the upholstery in all the recreation clubs. When he came to report that his job was "finish," he handed me a dozen bananas.

"That your dash, mastah," was his simple explanation. It was a subtle reminder that he expected an extra dash for the skilled work he had been doing. Of course he got his dash.

* * *

The natives with whom we are in daily contact come from many different tribes and speak many dialects. One often hears them conversing in pidgin English because they do not know each other's language.

Normally these people make their livelihoods from agriculture and fishing. They go out into the Bush and clear a little plot of ground and plant cassava and yams and corn. These with coconuts and the fruits that grow wild—bananas, mangoes and paw-paws—insure an ample food supply. For cash income they grow cocoa beans and Kola nuts and peanuts. In this fertile soil and abundant rainfall it doesn't require much ground to keep a family in food and spending money. Their needs are simple. They do not have to worry about the maintenance of automobiles and beauty parlors and cocktail bars and movie actors and summer vacations. If they have a few pennies in their pockets they are rich—and if they haven't, they are happy anyway.

* * *

The American army here distributes a large sum of money every month for native payrolls and the purchase of local commodities. Before I knew much about Africa, I assumed it was going to be quite a tragedy to these people when the war ended and Uncle Sam's bankroll was withdrawn.

I asked my houseboy about it. He owns a little plantation far back in the Bush. He would rather be there with his family. But the war ruined the market for his cocoa beans—and he came to the army camp to earn a living until farm markets improve. His pay plus dashes he gets for laundry and shining shoes and running errands amounts to more in a month than he received in the average year for his cocoa beans. But he will be glad when the war is over and he can return to his family.

He had ample food and shelter before all this American money came to Africa—and he will have those things when the Americans have departed. Family life means more to these people than excess wealth. I wish I could take a generous portion of that philosophy back to America with me.

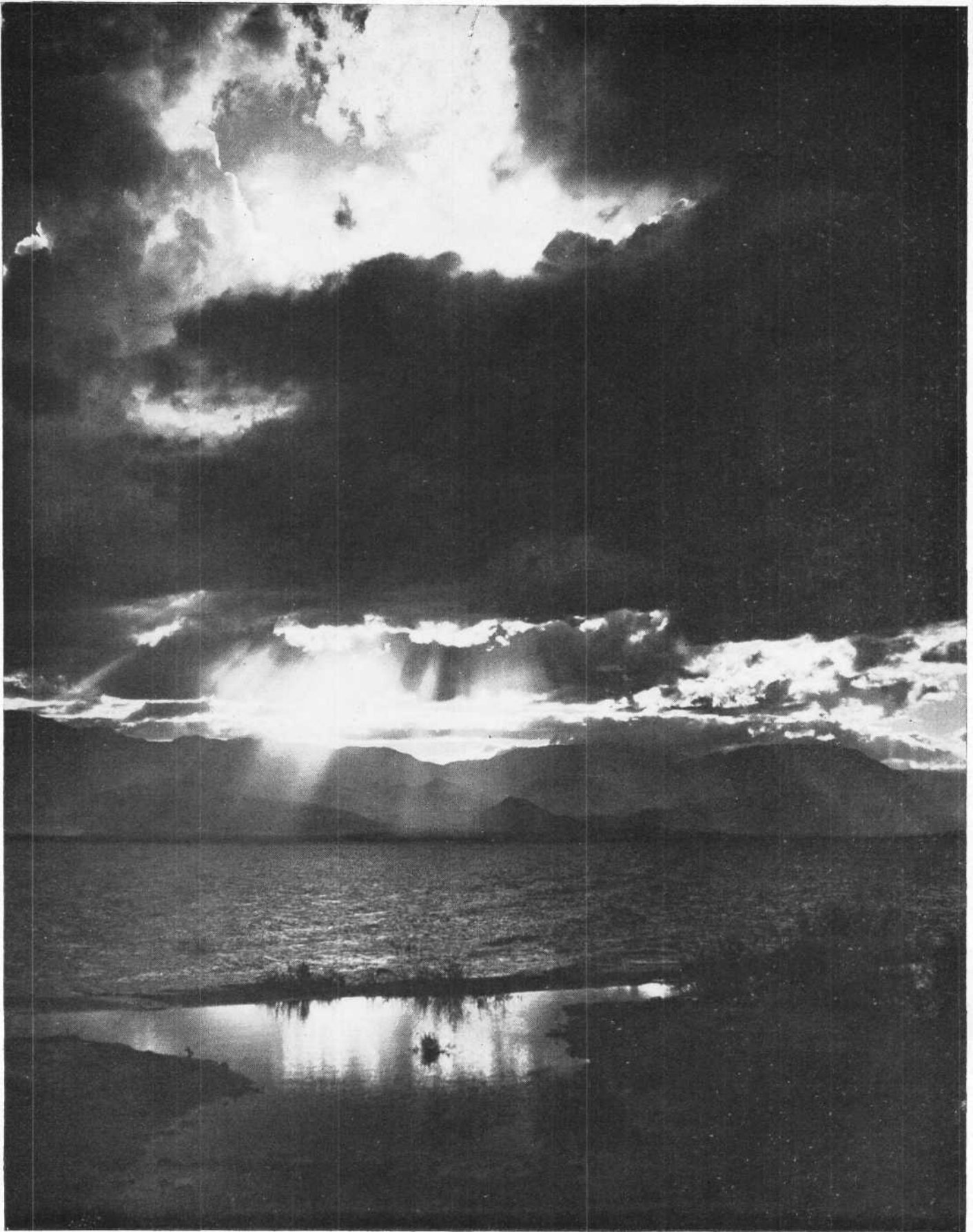
* * *

Allied forces are moving into Sicily as this is being written. To those of us whose homes are in the unconquered lands of the United Nations, this is thrilling news. We believe, with President Roosevelt, that "The Sicilian invasion is the beginning of the end for Germany and Italy."

I have tried to imagine what this invasion means to men and women in the conquered lands of Europe. I am sure that in the hearts of millions of French and Belgians and Poles and Norwegians and Czechs, who will be getting underground reports of this offensive, there is tonight a prayer of thanksgiving and hope such as only a human being in prison can understand.

To us, a victory will mean the return of loved ones, and the end of the inconveniences the war has imposed. But to those in conquered Europe and Asia it will mean freedom from the most abject bondage that humans can be called upon to endure.

I hope we will not fail these people in the critical days after the war of guns has ended.



Storm Clouds Over Salton Sea

By LOYD COOPER
Claremont, California

Salton Sea in Southern California was vast sandy depression, remnant of ancient Lake Cahuilla, when discovered in 1853 by Prof. W. P. Blake. Colorado river flood of 1905 poured over Imperial Valley into Salton Sink, filling it to a depth of 83 feet and length of 45 miles.

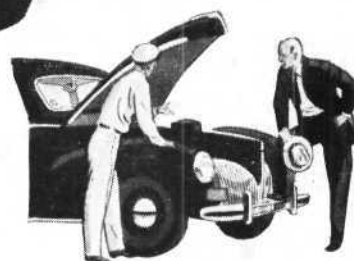
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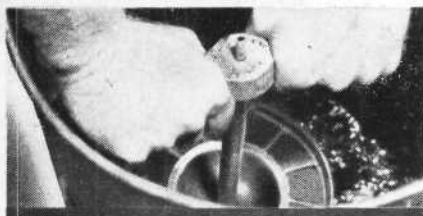
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